
EPA REG. NO. 82542-3



82542-3

Vol 1



009273459



U.S. Environmental Protection Agency
Office of Pesticide Programs
Registration Division (7505P)
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

EPA Reg.
Number:
82542-3

Date of Issuance:
OCT 11 2007
Date of Expiration:
09/01/2008

Term of Issuance: Conditional

Name of Pesticide Product:
Paraquat Concentrate

NOTICE OF PESTICIDE:

☒ Registration
☐ Reregistration

(under FIFRA, as amended)

Name and Address of Registrant (include ZIP Code):

Source Dynamics, LLC
10039 E. Troon North Drive
Scottsdale, AZ 85262

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

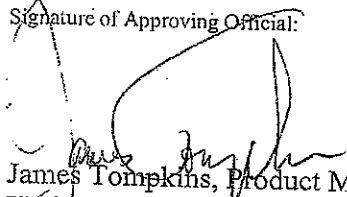
On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is conditionally registered in accordance with FIFRA section 3(c)(7)(A) provided that:

1. You submit the outstanding data requirements 830.6317 Storage Stability and 830.6320 Corrosion Characteristics within one year from the data of this letter.
2. Revise the EPA Registration Number from 82542-x to 82542-3 on the label.
3. Add an appropriate EPA Establishment Number to the label.

Signature of Approving Official:


James Tompkins, Product Manager (25)
Herbicide Branch, Registration Division (7505P)

Date:

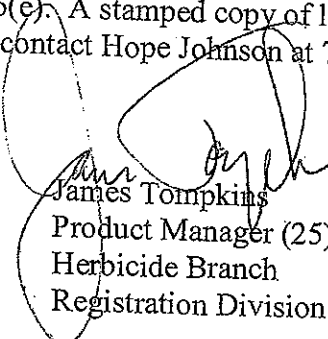
OCT 11 2007

4. The word POISON must appear in red on a contrasting background.. A Skull & Crossbones symbol must appear in close proximity to the word POISON.
5. Place the words "Manufactured for" before Source Dynamics, LLC; 10039 E. Troon North Drive; Scottsdale, AZ 85262
6. The "Net Contents" section on the first page must list the various container sizes you will market.
7. Add the following statement directly following the INGREDIENT STATEMENT: "This product contains the toxic ingredient methanol at 7%"
8. Revise the statement "Contains emetic" to "Contains emetic and stench (odor)" on page 1
9. Revise the PRECAUTIONARY STATEMENTS to the following: "May be fatal if swallowed. Fatal if inhaled. Corrosive. Causes irreversible eye damage. Wear protective eyewear. Do not breathe spray mist. Wear a dust mist respirator. Do not get in eyes or on clothing. Harmful if absorbed through skin. Avoid contact with skin. Prolonged or frequently repeated contact may cause allergic reactions in some individuals."
10. In the PPE section, replace "Dust mist NIOSH-approved respirator with any N, R, P, or HE filter" with "NIOSH approved particulate filtering respirator equipped with N, R, or P class filter media. The respirator should have a NIOSH approval number prefix TC-84A. It is recommended that you require that respirator wearer be fit tested, and trained in the use, maintenance, and limitations of the respirator" in the subsections "Applicators and other handlers (other than mixer mixers and loaders) must wear" and "Mixers and Loaders must wear"
11. On page 3, Move the statements "Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them, Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep separately from other laundry" from its current location to its own separate box.
12. On page 5 in the Spray Drift Information Section add the statement "Where states have more stringent regulations, they must be observed."
13. On page 8, remove the word "recommended" from the sections "Rates of Paraquat Concentrate" and "Spray Volume"
14. On page 7 in the section "Use of a Nonionic Surfactant or Crop Oil Concentrate"-subsection "Nonionic Surfactant" change "nonionic surfactant" to "nonionic surfactant cleared for the current use" Make the same change under "Crop Oil Concentrate"
15. On page 13, revise "ncluding" to "including" in the section Alfalfa-Dormant Season-Weeds.
16. On page 14, revise "high" to "higher" in the statement "If ryegrass, sheperdspurse, sowthistle, or groundsel are present, use high rate."
17. On page 17, in the section DRY PEAS and DRY BEANS, separate each commodity listed so that each commodity is on a separate line.
18. On page 19, in the section CHEMICAL FALLOW-Wheat-Annual Crop-Wheat Rotations (Spring applied prior to planting an annual crop), revise "recommendations" to "directions"
19. On page 20, revise "high" to "higher" in the statement "If ryegrass, sheperdspurse, sowthistle, or groundsel are present, use high rate."
20. On page 26, in the section COTTON-Desiccation of Regrowth, revise "recommended" to "listed" in the statement "Because regrowth is difficult to control, thorough coverage with the full recommended rate is necessary."
21. On page 28, separate "60" and "200 (CA only)" on different lines so that the grazing or preharvest interval days are clear.
22. On page 33, remove the word "recommended" from the section SOYBEANS

23. On page 37, in the section TREES AND VINES, separate each commodity listed so that each commodity is on a separate line.
24. On page 40, separate the additional precautions, restrictions and directions for the sections VEGETABLES-Tomatoes and VEGETABLES-(CA,WA,OR,ID only)-Lettuce, Melon, Sugar beets, Tomatoes, as currently they are all listed together and indistinguishable from each other. (i.e create a thick black line after the statement "To minimize drift, do not use nozzles or nozzle configurations which product fine spray droplets (mist), as that is the last statement in the section VEGETABLES-Tomatoes.
25. On page 44 under "Container Disposal" remove "?" Change "Minibulk containers: Return empty containers for reconditioning" to "Mini-Bulk Containers - Reseal container and offer for reconditioning, or triple rinse (or equivalent) and offer for recycling or reconditioning, or clean in accordance with manufacturer's instructions."
26. Add the following statements in the STORAGE AND DISPOSAL section, at the end of the Container Disposal subsection: Mini-Bulk Refillable Containers: "Before refilling, inspect thoroughly for damage, such as cracks, punctures, bulges, dents, abrasions and damaged or worn threads on closure devices. After filling and before transporting, check for leaks. Do not refill or transport damaged or leaking container."
27. This registration will expire, without hearing rights, on September 1, 2008, unless the registrant submits an amendment to remove the time limitation no earlier than six months before the expiration date.
28. Upon receipt of the amendment, the Agency will review all available information and will re-evaluate whether the registrant's product still differs only in ways that would not significantly increase the risk of unreasonable adverse effects on the environment.
29. The Agency will issue its decision on the amendment request taking into account the determination described in paragraph 28 no later than the expiration date of the registration.
30. If the Agency fails to make the determination described in paragraph 28 by the expiration date, the registration will remain in effect until the Agency makes such a determination as described in paragraph 31.
31. If the Agency determines that the registration no longer meets the standard for registration as described in paragraph 28, the Agency will notify the registrant of this decision to deny the amendment. The Agency will initiate a Notice of Intent to Cancel the registration pursuant to section 6(e) of FIFRA.
32. If the Agency determines that the registration continues to meet the standard for registration, the amendment request will be granted and the time limitation will be removed or conditioned upon other terms that are necessary in light of the new information.

The basic formulation CSF [dated 9-10-07] of the product referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act are acceptable. The basic CSF will be added to your file.

You will submit one (1) copy of your final printed labeling before you release the product for shipment. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e). A stamped copy of labeling is enclosed for your records. If you have any questions, please contact Hope Johnson at 703-305-5410.


James Tompkins
Product Manager (25)
Herbicide Branch
Registration Division (7505P)

Restricted Use Pesticide due to acute toxicity. For retail sale to and use only by certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator's certification.

PARAQUAT CONCENTRATE

Defoliant and desiccant herbicide for the control of weeds and grasses and as a harvest aid.

NEVER PUT INTO FOOD, DRINK OR OTHER CONTAINERS.
IF SWALLOWED, TAKE IMMEDIATE ACTION AS PRESCRIBED IN FIRST AID.
SYMPTOMS ARE PROLONGED AND PAINFUL.
DO NOT USE OR STORE IN OR AROUND THE HOME.
DO NOT REMOVE CONTENTS EXCEPT FOR IMMEDIATE USE.
THE ODOR OF THIS PRODUCT IS FROM THE STENCHING AGENT WHICH HAS BEEN ADDED, NOT FROM PARAQUAT.

NET CONTENTS: _____

Active Ingredient:

paraquat dichloride (1,1'-dimethyl-4,4'-bipyridinium dichloride)	43.2%
Other Ingredients:	56.8%
Total:	100.0%

Contains 3.0 pounds paraquat cation per gallon as 4.14 pounds of dichloride salt per gallon. Contains emetic.

KEEP OUT OF REACH OF CHILDREN

DANGER/PELIGRO

POISON

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

EPA Reg. No. 82542-x
EPA Est. No.
Product of Taiwan

ACCEPTED
with COMMENTS
in EPA Letter Dated

OCT 11 2007

Under the Federal Insecticide,
Fungicide, and Rodenticide Act
as amended, for the pesticide
registered under EPA Reg. No.

82542-3

Source Dynamics, LLC
10039 E. Troon North Drive
Scottsdale, AZ 85262

FIRST AID Contains Paraquat, a Bipyridinium Herbicide Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

If swallowed	<ul style="list-style-type: none"> • Call a poison control center or doctor IMMEDIATELY for treatment advice. • SPEED IS ESSENTIAL. Immediate medical attention is required. If available, give an absorbent such as activated charcoal, bentonite or Fuller's Earth. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • The odor of this product is from the stenching agent, which has been added, not from the paraquat. • If person is not breathing, call 911 or an ambulance. • Call a poison control center or doctor for treatment advice.
If in eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN Administer either activated charcoal (100g for adults or 2g/kg body weight in children) or Fuller's Earth (15% solution; 1 liter for adults or 15ml/kg body weight in children). NOTE: The use of gastric lavage without administration of an absorbent has not shown any clinical benefit. Do not use supplemental oxygen. Eye splashes from concentrated material should be treated by an eye specialist after initial treatment. With the possibility of late onset corneal ulceration, it is advised that patients with paraquat eye injuries are reviewed by an eye specialist the day after first presentation. Use treatment that is appropriate for chemical burns. Intact skin is an effective barrier to paraquat; however, contact with irritated or cut skin or repeated contact with intact skin may result in poisoning.

HOT LINE NUMBERS:

SAFETY DATA AND INFORMATION 203-573-3303
TRANSPORTATION EMERGENCY (CHEMTREC) 800-424-9300

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER. May be fatal if swallowed. Fatal if inhaled. Do not breathe spray mist. Wear a dust mist respirator. Causes irreversible eye damage. Wear protective eyewear. Do not get in eyes or on clothing. Harmful if absorbed through skin. Avoid contact with skin. Prolonged or frequently repeated contact may cause allergic reactions in some individuals.

IMPORTANT: Inhalation is an unlikely route of exposure due to low vapor pressure and large spray droplet size, but mucosal irritation or nose bleeds may occur. Prolonged contact with this concentrated product can irritate your skin.

Personal Protective Equipment (PPE) Applicators and other handlers (other than mixers and loaders) must wear:

Long-sleeved shirt and long pants; Chemical resistant gloves – Category A (e.g., barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC) or viton); Shoes plus socks; Protective eyewear; A dust mist NIOSH-approved respirator with any N, R, P, or HE filter.

Mixers and loaders must wear:

Long-sleeved shirt and long pants; Chemical resistant gloves – Category A (e.g., barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC) or viton); Shoes plus socks; Dust mist NIOSH-approved respirator with any N, R, P, or HE filter; Chemical resistant apron; Face shield.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Controls: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, and chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is **toxic to wildlife**. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters.

Paraquat dichloride is **toxic to nontarget crops and plants** if off-target movement occurs because it desiccates all green plant tissue. Extreme care must be taken to ensure that off-target drift is minimized to the greatest extent possible. Refer to the local state laws, regulations, guidelines, and spray drift information contained in the Directions for Use section for proper application to avoid off-target movement. Do not apply under conditions involving possible drift to food, forage, or other plantings that might be damaged or the crops thereof rendered unfit for sale, use, or consumption. Do not apply when weather conditions favor drift from treated areas. To avoid drift, do not make aerial application during periods of thermal inversion.

PHYSICAL AND CHEMICAL HAZARDS

This product is **mildly corrosive to aluminum** and produces hydrogen gas which may form a highly combustible gas mixture. Do not mix or store in containers, spray tanks, nurse tanks, or such systems made of aluminum or having aluminum fittings. The product is compatible with high density polyethylene and rubber-lined steel containers.

DIRECTIONS FOR USE

Restricted Use Pesticide. It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation. Do not use around home gardens, schools, recreational parks, golf courses or playgrounds.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to use of this product that are covered by the Worker Protection Standard.

For preplant or preemergence (broadcast or banded), chemical fallow, postemergence directed spray applications, early postemergence broadcast in peanuts and dormant season applications, and "between cutting" applications in alfalfa: Do not enter or allow worker entry into treated areas during the **restricted-entry interval (REI) of 12 hours**.

For harvest aid and desiccation application: Do not enter or allow worker entry into treated areas during the **restricted entry interval (REI) of 24 hours**.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

Coveralls

Shoes plus socks
Protective eyewear
Chemical resistant gloves - Category A (e.g., barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC) or viton).

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

DO NOT enter or allow others to enter the treated area until sprays have dried.

AVOID working in spray mist.

Keep all unprotected persons out of operating areas or vicinity where there may be danger of drift.

Certain states may require more restrictive reentry intervals; consult your State Department of Agriculture for further information.

GENERAL INSTRUCTIONS AND INFORMATION

Do not apply this product through any type of irrigation system.

When **PARAQUAT CONCENTRATE** is applied at less than 10 gallons per acre finished spray volume, a drift control or spray deposition additive **SHOULD** be used. Refer to the additive label for rates of applications, directions for use, limitations, and restrictions.

SPRAY DRIFT INFORMATION

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following **DRIFT MANAGEMENT REQUIREMENTS** must be followed to avoid off-target drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed $\frac{3}{4}$ the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45°. Where states have more stringent regulations, they shall be observed.

The applicator should be familiar with and take into account the information covered in the Aerial Drift Reduction Advisory Information.

AERIAL DRIFT REDUCTION ADVISORY INFORMATION

Information on Droplet Size

The most effective way to reduce drift potential is to apply large droplets. The best management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environment conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

Controlling Droplet Size

- **Volume** - Use high flow rate nozzles to apply the highest spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length

For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

Application Height

Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making application at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

Wind

Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

GENERAL INFORMATION

PARAQUAT CONCENTRATE is a liquid formulation containing 3 lbs. of active ingredient per gallon. It contains a nontoxic odor to help prevent accidental ingestions. It also contains an emetic (an agent which will induce vomiting if the product is swallowed).

APPLICATION

PARAQUAT CONCENTRATE is a contact herbicide for control or suppression of a broad spectrum of emerged weeds including most small annual broadleaf and grass weeds. It can also be used to suppress perennial weeds by destroying green foliage and as a desiccant/ defoliant at harvest.

Complete coverage of target weeds is necessary to get good control because PARAQUAT CONCENTRATE is a contact-type herbicide. It is also necessary to obtain complete coverage for good crop desiccation and defoliations. Undesirable weed control and undesirable crop desiccation/defoliation will result if improper application technique and/or application to large, stressed, or mown weeds are made. Refer to the following details for specific application instructions.

Thorough coverage of all green foliage is required for efficacious weed control and crop defoliation and desiccation because PARAQUAT CONCENTRATE requires actively growing green plant tissue to function. Drought-stressed weeds, weeds with little green foliage (i.e., mowed or cut weeds), or mature woody bark of trees and vines are unaffected by application with PARAQUAT CONCENTRATE.

There is no residual soil activity to affect later-planted crops or later germinating weeds because clay and organic matter rapidly tie up PARAQUAT CONCENTRATE.

ROTATIONAL CROPS

After the last application PARAQUAT CONCENTRATE, all rotational crops may be planted immediately.

RAINFASTNESS

Rain occurring 30 minutes or more after application will have no effect on the activity of PARAQUAT CONCENTRATE because it is rapidly absorbed by the weed foliage.

USE OF A NONIONIC SURFACTANT OR CROP OIL CONCENTRATE

The following should always be added and be used at the recommended rates or there will be a reduction in efficacy of PARAQUAT CONCENTRATE.

Nonionic Surfactant: Either add a nonionic surfactant containing 50-74% surface-action agent at 0.25% v/v (2 pts./100 gals.), or add nonionic surfactant containing 75% or more surface-active agent at 0.125% v/v (1 pt./100 gals.), of the finished spray volume for ground applications. Add a nonionic surfactant at 0.25% v/v (2 pts./100 gals.) of the finished spray volume for aerial applications.

Crop Oil Concentrate: For ground applications, add a nonphytotoxic crop oil concentrate that contains 15-20% approved emulsifier, with 1.0% v/v (1 gal./100 gals.) of the finished spray volume. Add 1 pt. of crop oil concentrate per acre for aerial applications. **For cotton harvest aid, do not use crop oil concentrate when using PARAQUAT CONCENTRATE.**

NOZZLE SELECTION

The use of flat-fan nozzles is the most effective application of PARAQUAT CONCENTRATE. The use of flood nozzles may result in a reduction of weed control due to inadequate coverage because they produce large uneven droplets.

Use only flat fan nozzles when spraying less than 20 gallons of spray carrier per acre using the following table.

Recommended Nozzle Type and Spray Pressures and Setup

	Nozzle Type	
	Flat Fan	Flood
Maximum Size	8	15
Spray Pressure (at nozzle)	30-50 psi	30-50 psi
Maximum Nozzle Spacing	30"	40"
Direction of Spray Pattern	Down	Down
Maximum Speed	10 mph	10 mph
Spray Overlap (at each edge)	30%	50%

Reduced control will result if nozzles, pressures, or setups differ from the above chart.

SPRAY CARRIER

PARAQUAT CONCENTRATE may be inactivated by muddy water, or suspension-type fertilizers containing clay. Therefore, always use clean water (free of mud or clay), clear liquid nitrogen, or complete clear liquid fertilizers as the carrier when spraying this product. Never use suspension-type fertilizers containing clay as the spray carrier. Always use the higher rate of PARAQUAT CONCENTRATE and surfactant if using a complete clear liquid fertilizer containing high phosphate levels as the spray carrier.

Note: It is important that when using liquid fertilizers such as 28% N as a spray carrier, that nonionic surfactant still be used with PARAQUAT CONCENTRATE. The use of liquid fertilizer carriers are not substitutes for surfactants.

RATES OF PARAQUAT CONCENTRATE

With each use, follow recommended rates listed in the following tables. When weeds are larger or are dense, use the higher label rates. For use as a harvest aid, use higher rate when crop vegetation is dense. Do not exceed 0.50 lbs. a.i./A in a minimum of 30 gallons of spray for broadcast applications with backpack sprayers.

SPRAY VOLUME

With each use, follow recommended rates listed in the following tables. Spray volumes should be increased as necessary to obtain complete coverage of the target weed or plant without runoff from the foliage, because **the volumes listed are minimum volumes only.**

TARGET WEEDS SHOULD NOT EXCEED SIX INCHES IN HEIGHT WHEN SPRAYING LESS THAN 20 GALLONS OF SPRAY CARRIER PER ACRE.

APPLICATION TIMING

Applications should be made to small emerged weeds. Larger weeds more than 6 inches in height may be more difficult to control than weeds 1-6 inches in height. If possible, when green foliage is removed either from grazing or mowing, allow the weeds to grow 2-4 inches in height. Also, during harvesting forage or grain crops before spraying, weeds present in the field are also cut. Therefore, raise cutter bars as high as possible from the ground to cut stubble and weeds at a greater height, allowing sufficient green foliage to remain for applications.

BURNDOWN OF GRASS COVER CROPS OR VOLUNTEER CEREALS

The best results occur for control of grass cover crops or volunteer cereals when PARAQUAT

CONCENTRATE is applied prior to tillering or after boot stage, especially with a wheat cover crop or volunteer wheat. Complete control may not be achieved with treatments made between tillering and boot stage. Complete control of perennial cover crops should not be expected.

ENVIRONMENTAL CONDITIONS

This product is active over a wide range of environmental conditions such as cool (below 55°F), cloudy or overcast weather. However these conditions will slow the activity of PARAQUAT CONCENTRATE.

SPOT SPRAYING

Refer to the following table if only small areas are to be sprayed with labeled applications.

Mixing Instructions for Small Quantities for Spot Spraying

If the Broadcast Rate Per Acre for PARAQUAT CONCENTRATE is:	Add The Following Amount of PARAQUAT CONCENTRATE to 1 Gallon of Water
1 1/2 pts.	1/3 fl. oz.
2 pts.	3/8 fl. oz.
2 1/2 pts.	1/2 fl. oz.
3 pts.	2/3 fl. Oz.

Add 1/3 - 1/2 fl. oz. of a nonionic surfactant for each gallon of spray at all times. Thoroughly wet the foliage, but not to the point of runoff when spot spraying in this manner.

TANK MIXING: ENHANCED BURNDOWN OF DIFFICULT-TO-CONTROL WEEDS AND FOR RESIDUAL WEED CONTROL

Photosynthetic Inhibitor Herbicides

To control difficult weeds, tank mix PARAQUAT CONCENTRATE with other herbicides. The addition of other photosynthetic inhibitors (PSI) herbicides will slow the activity of PARAQUAT CONCENTRATE. This allows PARAQUAT CONCENTRATE to thoroughly distribute throughout a treated leaf, thus achieving better control than if PARAQUAT CONCENTRATE was applied alone.

PARAQUAT CONCENTRATE may be applied in tank mixture with the following PSI herbicides:

AAtrex® Herbicide
Atrazine Herbicide
Bicep Lite II
MAGNUM® Herbicide
Bicep MAGNUM® Herbicide
Canopy® Herbicide
Lariat® Herbicide
Lexone® Herbicide
Linex® Herbicide
Lorox® Herbicide
Lorox Plus™ Herbicide
Princep® Herbicide

Sencor® Herbicide

Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions.

Improved Weed Control with PSI's

The addition of a PSI herbicide will help improve the control of difficult weeds listed below. Make a second application for best results.

Barnyardgrass
Broadleaf signalgrass
Cheatgrass
Cocklebur
Fall panicum
Giant ragweed
Knotweed
Kochia
Lambsquarters
Malva (cheeseweed)
Marestail
Morningglory
Pennsylvania smartweed
Perennial weeds (suppression only)
Prickly lettuce
Sedges
Tansymustard
Velvetleaf
Volunteer wheat

Improved Control of Perennial and Annual Broadleaf Weeds

Tank mixing with labeled 2,4-D ester (Low Volatile), 2,4-DB or Banvel® herbicide will help improve control when perennial broadleaf weeds such as Canada thistle, bindweed, dandelion, etc., or difficult to control annual broadleaf weeds such as giant ragweed or morningglory are present. Reduced grass control may be achieved when tank mixing the amine formulation of 2,4-D with PARAQUAT CONCENTRATE.

Order of Tank Mixing

It is advisable to tank mix PARAQUAT CONCENTRATE and other listed products as follows:

1. Fill spray tank 1/2 full with clean water or other approved carriers such as clear liquid fertilizer.
2. Begin tank agitation and continue throughout mixing and spraying.
3. Add dry formulations (WP, DF, etc.) to tank.
4. Add liquid formulations (SC, EC, L, etc.) to tank.
5. Add PARAQUAT CONCENTRATE to tank.
6. Add nonionic surfactant to tank.
7. Fill remainder of spray tank.

Always read other pesticide products labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions.

It is advisable to perform a jar test to check physical compatibility when using different formulation of the herbicides listed on this label.

GENERAL PRECAUTIONS AND RESTRICTIONS

EQUIPMENT

PARAQUAT CONCENTRATE is **corrosive to aluminum**. Thoroughly flush all aluminum spray equipment and aluminum aircraft structures that are exposed to spray solution or spray drift with water immediately after use.

The activity of PARAQUAT CONCENTRATE may be reduced in dry areas where dust stirred up by high winds or equipment tires can coat weed or plant leaves. Therefore, avoid applications in extremely dusty conditions.

LIMITATIONS AND PRECAUTIONS

- **Unless otherwise indicated, PARAQUAT CONCENTRATE will severely injure or kill crop plants emerged at time of application if they come in contact with sprays.**
- Do not pasture livestock in treated fields or feed treated foliage in cotton when this product is used as a cotton harvest aid.
- Do not use around home gardens, schools, recreational parks, or playgrounds.
- Do not apply to soils lacking clay minerals such as peat, muck, pure sand, artificial planting media for preplant and preemergence (to the crop) uses.
- To enable maximum weed and grass emergence prior to treatment, seedbeds and plantbeds should be formed as far ahead of planting and treatment as possible.
- Avoid disturbing soil when seeding or transplanting.
- Transplanted plants may become damaged when they come in contact with plastic mulch used for preplant weed control and that has been treated with this product. To prevent damage to the crop, sufficient wash-off such as rainfall or sprinkler irrigation prior to planting may be needed.
- PARAQUAT CONCENTRATE will be ineffective in controlling or suppressing weeds and grasses that have emerged after application.

APPLICATION INSTRUCTIONS

Crop	Weeds	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
ALFALFA (California only) New seedlings		Broadcast	0.7-1.3 pts. See Table 2.	Ground: 10 gals. Air: 5 gals.	70	<ul style="list-style-type: none"> Do not make more than one application per year. Applications should be made during late winter or early spring. Do not cut or harvest within 70 days after application. Alfalfa foliage present at time of application will be burned. Replanting may be needed due to the reduction of seedling stands. Do not apply to seedling alfalfa grown for seed.
ALFALFA Preplant or Preemergence (No-till or conventional planting)		Broadcast or Banded Over Row	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none"> Do not make more than 2 applications per year. Apply prior to emergence of the crop. Avoid disturbing soil when seeding. Crop plants emerged at time of application will be killed.
ALFALFA Dormant season Established plantings Region A - See table at end of Alfalfa section	Weeds, including bluegrass, chickweed, henbit, downy brome, ryegrass, cheatgrass, dogfennel, tansymustard, London rocket, sowthistle, rescue brome, wild oats, and other winter annuals; and suppression of perennial weeds.	Broadcast	1.3-2.0 pts.	Ground: 10 gals. Air: 5 gals.	42	<ul style="list-style-type: none"> Do not make more than one application per year. Fall regrowth: Do not apply if last fall cutting is greater than 6." Spring regrowth: Do not apply if last cutting is greater than 2". After the crop is dormant, apply to well-established stands that are at least 1-year old. Yield of first cutting may be reduced because alfalfa foliage present at the time of application will be burned. Do not cut or harvest within 42 days after application. For improved and longer-lasting weed control, tank mix with metribuzin (Lexone or Sencor). Always refer to the metribuzin label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.

Crop	Weeds	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions.
ALFALFA Dormant season Tank Mix with Velpar L-Herbicide Region A - See table at end of Alfalfa section	Weeds including chickweed, downy brome and tansymustard.	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 10 gals.	42	<ul style="list-style-type: none"> Do not make more than 2 applications per year. When weeds are less than 4 inches tall apply at 0.7 pt. rate PARAQUAT CONCENTRATE Mix PARAQUAT CONCENTRATE with 1-2 qts. of Velpar L per acre. Use lower rate of Velpar L on loamy sands or sandy loams. Always refer to the Velpar L label for weeds controlled, rates of applications, directions for use, limitations, and restrictions. During the dormant season, make one application to established alfalfa stands. Fall regrowth: Do not apply if last fall cutting is greater than 6." Spring regrowth: Do not apply if last cutting is greater than 2". Do not apply to alfalfa during the first season after seeding. Temporary chlorosis may occur on alfalfa regrowth. Increased chances of crop injury may occur if stress which may be caused in part by low fertility, disease, insects, winterkill, over cutting, drought or frost. DO NOT USE on gravelly or rocky soils, exposed subsoils, hardpan, sand or poorly drained alkaline soils as crop injury, including mortality, may result. Do not cut or harvest within 42 days of application.
ALFALFA Dormant Season On established plantings: Region B: See table at end of Alfalfa section. On fall-seeded newly established stands less than 1-year-old: Region A - See table at end of	Weeds including London rocket, sowthistle, rescue brome, wild oats, chickweed, ryegrass, bluegrass, cheatgrass, dogfennel, tansymustard, henbit, downy brome, and other winter annuals; and suppression of perennial weeds	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	60	<ul style="list-style-type: none"> Do not make more than one application per year. Applications should be made before first spring cutting and during late fall or winter months after the last fall cutting. California: Do not apply if spring regrowth after grazing or cutting is more than 2 inches in Orange and Riverside counties, and all counties north of these counties. All other areas within Region B: Do not apply if regrowth after grazing or cutting is more than 2 inches. Do not harvest within 60 days of application. Applications to alfalfa that is not dormant, or has broken dormancy, may result in stand and/or yield reductions. Replanting

Alfalfa section	On fall-seeded newly established stands less than 1-year-old; Region B - See table at end of Alfalfa section	California: Desiccation of weeds including bluegrass, ryegrass, shepherdspurse, chickweed, tansymustard, foxtail, sowthistle and groundsel.	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	60	<p>may be necessary. Green alfalfa foliage present at time of application will be burned.</p> <ul style="list-style-type: none"> • If there is a severe weed infestation, total hay yield of first cutting may be reduced in alfalfa fields and the reduction is typically directly proportionate to the loss of weed weight. • For improved and residual weed control in dormant established (at least 1-year-old) alfalfa, tank mix with metribuzin (Lexone or Sencor). Do not apply tank mix with metribuzin on alfalfa that is less than 1-year-old. • Always refer to metribuzin label for weeds controlled, rates of applications, directions for use, limitations, and restrictions. <p>California</p> <ul style="list-style-type: none"> • If ryegrass, shepherdspurse, sowthistle or groundsel are present, use high rate.
			Broadcast	0.5-0.8 pts.	Ground: 10 gals. Air: 5 gals.	60	

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
ALFALFA (East of the Rocky Mountains) Between-cuttings treatment in established plantings. (Includes first year alfalfa)	Broadcast	0.7 pt.	Ground: 10 gals.	30	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Control of weeds beyond the seedling stage and weed stubble cut off during harvest are less affected by this treatment. • Make applications immediately after alfalfa has been removed for hay or silage. • Do not treat more than 5 days after cutting. • A reduction in first year alfalfa stands and yields may occur if alfalfa is allowed to regrow more than 2 inches. • Burning of alfalfa foliage will occur at time of application. • Weed control may be reduced where moisture is limited such as in arid climates. • Do not cut or harvest within 30 days of application. • Apply as needed up to three times during the growing season in addition to a dormant application. • Do not make more than 2 applications during the first growing season of first-year alfalfa.
ALFALFA (For use only in the following states: ID, MT, NV, OR, UT, WA, WY)	Broadcast	1.7-2.7 pts.	Ground: 20-25 gals. Air: 5-10 gals.	See Precautions	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Do not harvest until at least 4 days after application. • Do not apply when weather conditions favor drift from treated areas. • Do not apply by ground equipment within 25 ft., or by air within 75 ft. of lakes; reservoirs; rivers; permanent streams; marshes or natural ponds; estuaries; and commercial fish farm ponds. • Use only on fields in production of alfalfa seed. Do not use on fields producing alfalfa for livestock feed. Do not use any portion of the

Desiccation of alfalfa to aid harvesting alfalfa

seed					treated field for human or animal feed, including seed, seed screenings, hay forage, or stubble
PARAQUAT CONCENTRATE/Reglone Tank Mix	Broadcast	1.3-2.7 pts. PARAQUAT CONCENTRATE/2 pts. Reglone	Ground: 20-25 gals. Air: 5-10 gals.	See Precautions	<ul style="list-style-type: none"> • Do not cut current year's treated alfalfa seed crop for hay or forage. Do not graze current year's treated alfalfa seed crops. • Do not use treated alfalfa seed for sprouting. Tag all alfalfa seed treated with PARAQUAT CONCENTRATE/Reglone tank mix at processing plants with, "NOT FOR HUMAN CONSUMPTION". The grower is responsible for notifying the processing plants of any seed crop treated with PARAQUAT CONCENTRATE/Reglone tank mix. • Remove ALL PARAQUAT CONCENTRATE/Reglone treated alfalfa seed screenings from the market because all screening from alfalfa seed processing are prohibited from feed channels.

ALFALFA: New Seedlings - Suppression and control of broadleaf weeds and grasses in new alfalfa seedlings grown for hay (California only).

For Control of:	Rate/Acre*	
	For Suppression	For Control
Annual Bluegrass	—	10.7-21.3 fl. oz.
Chickweed	—	10.7-21.3 fl. oz.
Fiddleneck (6 inches tall or less)	5.4-10.7 fl. oz.	21.3 fl. oz.
Red Maids (6 inches tall or less)	—	10.7-21.3 fl. oz.
Shepherdspurse	10.7-21.3 fl. oz.	—
Spikeweed (4 inches tall or less)	5.4 fl. oz.	10.7-16.0 fl. oz.
Volunteer Small Grain (8 inches tall or less)	5.4-10.7 fl. oz.	21.3 fl. oz.

*** Use the 5.4 fl. oz. rate only when alfalfa has at least 3 trifoliate leaves; use the 10.7 fl. oz. rate only when alfalfa has 6 trifoliate leaves; or use rates over 10.7 fl. oz. only when there are 9 trifoliate leaves.**

Alfalfa – Regions

REGION A
Alaska, California (counties of Del Norte, Siskiyou, Modoc, Shasta, Lassen, Plumas, Sierra and Nevada), Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey,

New York, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming

REGION B

Alabama, Arizona, Arkansas, California (all other counties not listed in Region A), Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Texas

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
ALMONDS	Directed Spray	0.8-2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • Avoid allowing spray to contact green stems (except suckers) or foliage. • When spraying around young trees, use a shield or wrap plant. • Do not graze treated areas and do not feed cover crops grown in treated areas to livestock. • Do not apply when nuts to be harvested are on the ground. • Retreatment or spot treatments may be necessary for mature woody weeds, perennial weeds, late germinating weeds and green suckers.
ARTICHOKE (GLOBE)	Directed Spray	1.7-2.7 pts.	Ground: 20-100 gals.	1	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Do not exceed 8 pts. per season. • Applications must be made at least 7 days apart. • Do not harvest within 24 hours of last application.
ASPARAGUS	Preplant or Preemergence Broadcast or Banded Over- Row.	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Application should be made prior to emergence of the crop. • Emerged asparagus at time of application will be killed.
ASPARAGUS Preemergence to	Broadcast or Banded Over-Row	1.7-2.7 pts.	Ground: 10 gals.	6	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Application should be made prior to emergence of the crop or after last harvest.

established plantings at least 2 years old.					• Emerged asparagus at time of application will be killed.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
BEANS, DRY Not for use in California Sweet lupin White sweet lupin White lupin Grain lupin Adzuki beans Asparagus beans Black beans Broad beans Field beans Garbanzo beans Kidney beans Lablab beans Moth beans Mung beans Navy beans Pinto beans Rice beans Tepary beans Urd beans Guar PEAS, DRY Not for use in California Blackeyed peas Chickpeas Cowpeas Crowder peas Southern peas Catjang	Harvest-Aid	0.8-1.3 pts.	Ground: 20 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Add nonionic spreader at 1 qt./100 gals. of spray mix. • Use a single application of the higher rate for vining type beans or bush type with lush growth. • May also be applied as a split application and may improve vine coverage. However do not make more than 2 applications per year or exceed a total of 1.3 pints per acre. • Apply when at least 80% of the pods are yellowing and mostly ripe and when leaves are no more than 40% of bush type peas or beans or 30% of vine type peas or beans are green. • Do not apply when weather conditions favor spray drift. To reduce drift, a drift control agent may be included. • Not registered for use in dry beans and dry peas in California.
BERRIES Blackberry Blueberry Boysenberry Currant Elderberry Gooseberry	Postemergence Directed Spray	1.3-2.7 pts.	Ground: 50 gals.	—	<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • New canes or shoots can be injured. Therefore, apply before their emergence. • To prevent crop injury from spray mist, apply as a coarse spray.

Huckleberry Loganberry Raspberry					
CACAO	Directed Spray	1.3-2.7 pts.	Ground: 50-200 gals.	1	<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • Apply when weeds are succulent and growth is from 1-6". • Retreatment or spot treatments may be necessary for mature woody weeds, late-germinating weeds and grasses and for perennials. • Use a shield for young trees to prevent sprays from contacting cacao plants, as injury may result. • Do not spray under windy conditions. • Do not graze treated areas or feed treated cover crops to livestock.
CASSAVAS, TANIERS & YAMS (Puerto Rico only)	Shielded Post Directed Spray	1.3 pts.	Ground: 50 gals.	90	<ul style="list-style-type: none"> • Cassavas and Taniers: Do not make more than 3 applications per year. • Yams: Do not make more than 2 applications per year. • Make applications when weeds are succulent and growth is 1-6". • Prevent spray from contacting crop to prevent injury to crop. • Do not spray under windy conditions. • Do not graze treated areas or feed treated forage to livestock.

General Information for Chemical Fallow

- As the density of stubble, crop residue or weeds increases, use higher spray volumes for better coverage.
- To control volunteer wheat or downy brome, fall-applied treatments generally work best with PARAQUAT CONCENTRATE. If possible, tank mix with atrazine for maximum burndown and residual control.
- Apply from immediately after harvest up to emergence of the newly seeded crop as a broadcast or band treatment.
- Before applying PARAQUAT CONCENTRATE, cut wheat as high as possible to avoid cutting weeds too short, and allow the weeds to grow at least 2-3" after harvest.
- The addition of dicamba (Banvel) or 2,4-D ester (Low Volatile) may aid in the suppression of emerged perennial broadleaf weeds and large annual broadleaf weeds. Always refer to the product label(s) for 2,4-D ester (Low Volatile), Banvel, or residual herbicide for rates of applications, directions for use, limitations, and restrictions.
- It is permissible to tank mix with registered residual herbicide combinations other than listed for extended weed control during the fallow period
 - Weeds and grasses emerging after application and weeds taller than 6 inches will not be controlled.
 - Crop plants emerged at the time of application will be killed.
 - The minimum total spray per acre allowed is 5 gallons for ground and 5 gallons for air applications.
 - Apply 5-60 gallons spray mix per acre by ground application.
 - When applying at less than 10 GPA by ground:
 - Do not apply with floaters or exceed a speed of 10 mph.
 - Apply with flat fan nozzles at 30-40 psi.
 - Apply only in a tank mix with atrazine at a minimum of 0.5 lb. a.i./acre.
 - By air: apply in 5-10 gallons of spray mix per acre.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CHEMICAL FALLOW Continuous Wheat (2-3 month recropping interval)	Broadcast	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7- 2.0 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply at least 45 days before seeding. • For volunteer wheat or downy brome control in spring, use at least 1.3 pts. of PARAQUAT CONCENTRATE per acre with a Photosynthetic Inhibitor Herbicide. • Refer to the section "General Information for Chemical Fallow".
CHEMICAL FALLOW Wheat-Fallow- Wheat Rotations (Fall applied after harvest; seeded 12-14 months later)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Spray before weeds produce seeds. • Control of volunteer wheat and downy brome control increases when applications are made late August or early September. • For improved burndown and residual control of weeds, tank mix with Atrazine, Marksman® Herbicide, or Command® Herbicide. • For improved burndown and residual control of grass and broadleaf weed tank mix with metribuzin (Sencor 75DF). • Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions. • Refer to the section "General Information for Chemical Fallow".
CHEMICAL FALLOW Wheat-Fallow- Wheat Rotations (Spring applied; seeded 3-5 months later)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • To conserve moisture, application should be made March 1 to April 15, prior to spring rains. • Even though moisture loss is greater when applications are made after the boot stage, volunteer wheat is easier to control after this stage. • For volunteer wheat or downy brome control in spring, use at least 1.3 pts. of PARAQUAT CONCENTRATE per acre with a Photosynthetic Inhibitor Herbicide. • Refer to the section "General Information for Chemical Fallow". • For burn down and residual control of grass and broadleaf weeds, tank mix with metribuzin, (Sencor 75DF/Lexone). • Always refer to the label for metribuzin (Sencor 75DF/Lexone) for rates of applications, directions for use, limitations, and restrictions.
CHEMICAL FALLOW Wheat-Annual Crop-Wheat Rotations (Fall applied in wheat stubble)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For improved burndown and residual weed control, tank mix with Atrazine or Marksman. Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions. • Make applications after wheat harvest and before weeds produce seed. • If grasses such as foxtails or banyardgrass recover, respray before seed production. • Applications made late August to November help control volunteer wheat and downy brome. • Refer to the section "General Information for Chemical Fallow".
CHEMICAL FALLOW Wheat-Annual Crop-Wheat Rotations (Spring applied prior to planting an annual crop)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For enhanced burndown and residual weed control, tank mix with Atrazine. Always refer to the respective product label(s) for Atrazine for rates of applications, directions for use, limitations, and restrictions. • For volunteer wheat or downy brome control in spring, use at least 1.3 pts. of PARAQUAT CONCENTRATE per acre with a Photosynthetic Inhibitor Herbicide. • Refer to the section "General Information for Chemical Fallow". • Refer to the Atrazine label for recommendations pertaining to soil pH and recropping intervals.

Approved Annual Crops are grain sorghum, corn, wheat, or proso millet.

Crop	Weeds	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CLOVER AND OTHER LEGUMES Including velvetbean, lespedeza, lupine, sainfoin, trefoil, vetch, crown vetch, and milk vetch. Dormant Season On established plantings: Region A - See table at end of Alfalfa section. On established plantings: Region B - See table at end of Alfalfa section. On fall-seeded, newly established stands less than 1-year-old: Region A - See table at end of Alfalfa section.	For desiccation of weeds, including London rocket, sowthistle, rescue brome, wild oats, chickweed, ryegrass, bluegrass, cheatgrass, dogfennel, tansymustard, henbit, downy brome, and other winter annuals, and suppression of perennial weeds. California • Use for desiccation of weeds including bluegrass, ryegrass, shepherdspurse, chickweed, tansy mustard, foxtail, sowthistle and groundsel.	Broadcast	1.3-2.1 pts.	Ground: 10 gals. Air: 5 gals.	60	<ul style="list-style-type: none"> • Do not make more than 1 application per year. • Applications should be made during late fall or winter months after the last cutting and before first spring cutting. • Do not apply if regrowth after grazing or cutting is more than 2". • Do not harvest within 60 days of application. • CAUTION: Stand and/or yield reductions may occur when applications are made to clover or other legumes that are not dormant, or have broken dormancy. Therefore, it may be necessary to replant. Burning will occur to green clover or other legumes' foliage present at the time of application. • Discoloration and temporary stunting will occur in clover or other legumes foliage present at the time of application. • If there is severe weed infestation, the total hay yield of first cutting may be reduced in clover or other legumes fields and is usually directly proportionate to the loss of weed weight. In California: <ul style="list-style-type: none"> • If ryegrass, shepherdspurse, sowthistle or groundsel are present, use high rate.
		Broadcast	0.7-1.3pts.	Ground: 10 gals. Air: 5 gals.	60	
		Broadcast	0.7-1.3pts.	Ground: 10 gals. Air: 5 gals.	60	

On fall-seeded, newly established stands less than 1-year-old: Region B - See table at end of Alfalfa section.	Broadcast	0.5-0.8 pts.	Ground: 10 gals. Air: 5 gals.	60
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CORN FIELD CORN POPCORN SWEET CORN SEED CORN (Used alone)	Preplant or Preemergence Broadcast or Banded Over Row	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Includes field, fresh sweet, forage, fodder and popcorn. • To permit maximum weed and grass emergence, seedbeds should be formed as far ahead of planting and treatment as possible. • Seeding should be done with a minimum amount of soil disturbance. • Control will not occur when applications are made after weeds and grasses have emerged. However, crop plants emerged at time of application will be killed.
CORN Tank mixes for no-till/reduced till	Preplant or Preemergence Broadcast or Banded Over Row	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.*	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Applications should be made as broadcast sprays before, during or after planting, but before crop emergence. • PARAQUAT CONCENTRATE may be tank mixed with the following herbicides for improved burndown or residual control: 2,4-D Ester (Low Volatile) Harness® Harness® Xtra AAtrex®/Atrazine Lasso® Herbicide Banvel® Linex® Bicep MAGNUM® Lorox® Bicep Lite II MAGNUM® Princep® Dual MAGNUM Prowl® Herbicide Frontier® Simazine® Guardman® Surpass® EC Harmony® Extra Herbicide Surpass® 100 (Preplant only) Topnotch® • PARAQUAT CONCENTRATE may also be tank mixed with Ambush® insecticide. • Always refer to respective product label(s) for rates of applications, directions for use, limitations, and

					restrictions.
					<p>* Always refer to respective product label(s) to confirm if these products can be applied by air.</p>
FIELD CORN, POPCORN, SWEET CORN, SEED CORN	Postemergence Directed Spray (including Hooded or Shielded)	0.7-1.3 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Applications should be made when weeds are actively growing. • Use a higher rate on larger or hard to control weeds. Weeds 6" or taller may not be controlled. • Severe damage and/or complete kill can occur if spray contacts corn plants <p>For Hooded Or Shielded Sprayers:</p> <ul style="list-style-type: none"> • Use a hooded or shielded sprayer with skids or wheels on the spray boom to maintain spray height in order to prevent excessive crop phytotoxicity. • Apply by directing spray between the rows and using hooded or shielded sprayers to prevent spray contact with crop plants. <p>For Directed Spray Without Hooded Or Shielded Sprayers:</p> <p>Corn height is measure from soil surface to top of whorl.</p> <ul style="list-style-type: none"> • Apply when corn is at least 10" tall with nozzles arranged to spray no higher than the lower 3" of corn stalks. • Corn plants shorter than 10" may be injured and not recover. • For corn more than 20" tall: Arrange the nozzles to spray no higher than the lower 1/3 of the corn stalks. • Injury to corn foliage will occur if sprayed. However, corn will recover and develop normally.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
FIELD CORN, POPCORN, SEED CORN	Harvest Aid Broadcast	0.8-1.3 pts.	Ground: 20 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than one application per year. Make ONE (1) application at least 7 days prior to harvest. • Apply after the corn is mature. This is indicated by a black layer which forms at the base of the kernels. You may consult your local agricultural authority for help in identifying the black layer. • Add nonionic surfactant containing at least 75% surface active ingredient at 0.25% v/v. • To desiccate mature broadleaf weeds and grasses or broadleaf weeds and grasses that are taller than 18", use 1.3 pts. • Drought stressed plants, especially broadleaf weeds, can be difficult to kill, and desiccation may not be complete.

FIELD CORN ONLY (grain, fodder, forage)	Postemergence Directed Spray USDA Witchweed Eradication Program	1.3 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • If regrowth occurs, initiate sprays in late June to early July and repeat in early August. • Follow application instructions in post-emergence directed spray section above.
FIELD CORN ONLY (grain, fodder, forage) 2,4-D Amine AE Tank Mix	Postemergence Directed Spray USDA Witchweed Eradication Program	5.4 fl. oz. +0.5 lb. 2,4-D Amine AE	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply as directed spray onto grassy weeds and witchweed before witchweed blooms. If regrowth occurs, reapply. • Follow application instructions in post-emergence directed spray section above. • Always refer to respective product label(s) for rates of applications, directions for use, limitations, and restrictions.
COTTON (Used alone)	Preplant or Preemergence	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply prior to, during or after planting, but before crop emergence. • For fallow bed treatment, beds should be preformed to permit maximum weed and grass emergence prior to treatment. • Seeding should be done with a minimum of soil disturbance.
COTTON (California only; Used alone)	Preplant	5.4-10.7 fl. oz.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For control of volunteer barley in preformed seedbeds.
COTTON Goal® Herbicide Tank Mix	Preplant or Fallow Bed Broadcast	1.7-2.7 pts.	Ground: or Air: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Always refer to the Goal label for weeds controlled, rates of applications, and directions for use, limitations, and restrictions.
COTTON Other Tank Mixes	Preplant or Preemergence	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply as a broadcast spray before, during or after planting, but before crop emergence. • For improved residual control or burndown, PARAQUAT CONCENTRATE may be tank mixed with the following herbicides: <ul style="list-style-type: none"> o Caparol® Herbicide o Cotoran® Herbicide o Cotton-Pro® Herbicide o Diurone® o Dual MAGNUM® o Harmony Extra (Preplant Only) o Meturon® Herbicide o MSMA o Prowl® o Zorial® Herbicide

				<ul style="list-style-type: none"> • When tank mixing with Cotoran DF[®] or Meturon DF[®], follow mixing instructions carefully, maintain constant agitation, and see Order of Tank Mixing section in respective labels. • When tank mixing with any of the herbicides listed above, always refer to respective product label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
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COTTON Harvest Aid Use Restrictions

- Do not make more than 4 applications per year.
- Do not pasture livestock in treated fields or feed treated foliage.
- Do not apply to cotton within 3 days before harvest.
- Repeat application if necessary. Do not exceed a total of 1.3 pts./A as a harvest aid.

May be tank mixed with other cotton harvest aid materials known to be effective by a local expert. Unless otherwise instructed in this label, always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions.

• PARAQUAT CONCENTRATE can be applied in a tank mix with methyl parathion and/or Karate[®] insecticide. Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions.

• Nodes above cracked bolls (NACB) timing is for guidance and is not intended to restrict the local expert in their use of the product.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
SOUTHERN COTTON Harvest aid for boll opening and defoliation (Tank mix with phosphate and chlorate defoliants).	Broadcast	5.4 fl. oz. + 1 pt. phosphate or 1 gal. chlorate	Ground: 10 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • Development of immature bolls will be inhibited. • Apply when 80% or more of the bolls are open and the remaining bolls to be harvested are mature. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.
SOUTHERN COTTON Additional tank mixes for boll opening and defoliation	Broadcast	2.1-3.3 fl. oz.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • PARAQUAT CONCENTRATE may be tank mixed with the following products to aid in defoliation and opening of mature bolls. Accelerate[®] Defoliant Def[®] Defoliant Dropp[®] Defoliant Ethephon Plant Growth Regulator Folex[®] Defoliant Harvade[®] Harvest Growth Regulator Prep[™] PGR • Apply when 60% or more of the bolls are open and the remaining bolls to be harvested are mature.

					<ul style="list-style-type: none"> • Development of immature bolls will be inhibited. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.
SOUTHERN COTTON Post Defoliation - To aid in opening of mature bolls and to desiccate green weeds.	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	3	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • If weed infestation is heavy or dense, use higher rate. • Apply when 75% or more of bolls are open and remaining bolls to be harvested are mature. • Development of immature bolls will be inhibited. • After a defoliation or conditioning application has been made, delay desiccation application of PARAQUAT CONCENTRATE approximately 3-7 days to minimize leaf sticking.
WESTERN COTTON Harvest aid for boll opening and early defoliation	Broadcast	3.7-5.4 fl. oz. + phosphate or sodium chlorate; and/ or other compatible harvest aid products.	Ground: 10 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • On rank cotton, use higher rate. • Do not use more than 5.4 fl. oz of PARAQUAT CONCENTRATE for early defoliation as excessive desiccation may occur. • Early defoliation timing is when 60% or more of the bolls are open and the remaining bolls to be harvested are mature (approximately 4 NACB). • Development of immature bolls will be inhibited. • Do not use more than 4.0 lbs. of actual sodium chlorate defoliant per acre at this early defoliation timing. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
WESTERN COTTON Harvest aid for boll opening and mid-to-late defoliation	Broadcast	5.4-10.7 fl. oz. alone or tank mix with sodium chlorate or phosphate defoliation and/ or other compatible harvest aid products.		3 (Alone)	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • Use the 10.7 fl. oz. rate of PARAQUAT CONCENTRATE in desert cotton areas or on rank vigorous cotton. • Mid-to-late defoliation timing is when 75% or more of the bolls are open and remaining bolls to be harvested are mature (approximately 3 or fewer NACB). • Development of immature bolls will be inhibited. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.
COTTON Stripper or Spindle Harvested	Broadcast	2.1-7.5 fl. oz.	Ground: 10 gals. Air:	3	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • BECAUSE OF EXTREMES IN ENVIRONMENTAL AND PLANT CONDITIONS, IT IS ADVISABLE TO APPLY THE RANGE OF RATES ON A SMALL BLOCK OF COTTON TO DETERMINE THE

Harvest aid for defoliation and boll opening.			5 gals.		<p>RATE THAT BEST FITS YOUR NEEDS. • Apply when 75% of the bolls are open and the remaining bolls to be harvested are mature.</p> <p>• DEVELOPMENT OF IMMATURE BOLLS WILL BE INHIBITED, SLICE BOLLS AND INSPECT THE SEED FOR MATURITY.</p> <p>• PARAQUAT CONCENTRATE may be applied alone or tank mixed with the following cotton harvest aids:</p> <p>Accelerate Defoliant®</p> <p>Def Defoliant®</p> <p>Dropp Defoliant® EthePhone Plant Growth Regulator Folex Defoliant®</p> <p>Harvadee Harvest Growth Regulator Prep™ PGR</p> <p>• May be applied as a split application. Do not exceed a total of 1.3 pts./A.</p> <p>• To avoid leaf sticking, apply PARAQUAT CONCENTRATE as a desiccant approximately 3-7 days after defoliant or a conditioning application and 7-14 days before harvest.</p> <p>• Cooler temperatures may cause a longer waiting period between application of PARAQUAT CONCENTRATE as a desiccant and defoliation/ conditioner.</p> <p>• South of Interstate-10 in Texas, where temperatures are typically higher during defoliation, lower rates in the range may be necessary.</p> <p>• Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.</p>
COTTON Late season desiccation	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	3	<p>• Do not make more than 4 applications per year.</p> <p>• BECAUSE OF EXTREMES IN ENVIRONMENTAL AND PLANT CONDITIONS, IT IS ADVISABLE TO APPLY THE RANGE OF RATES ON A SMALL BLOCK TO DETERMINE THE RATE THAT BEST FITS YOUR NEEDS.</p> <p>• May be applied as a split application. Do not exceed a total of 1.3 pts./A.</p> <p>• Apply when 85% of the bolls are open and the remaining bolls to be harvested are mature (approximately 0 NACB).</p> <p>• Development of immature bolls will be inhibited. Slice bolls and inspect the seed for maturity.</p> <p>• South of Interstate-10 in Texas, where temperatures are typically higher during defoliation, lower rates in the range may be necessary.</p> <p>• Delay desiccation application of PARAQUAT CONCENTRATE approximately 3-7 days to minimize leaf sticking if a defoliation or conditioning application has been made.</p> <p>• May be tank mixed with other harvest aid materials known to the local expert to be effective.</p>
COTTON Desiccation of regrowth	Broadcast	0.75-1.25 pts.	Ground: 10 gals. Air: 5 gals.	3	<p>• Do not make more than 4 applications per year.</p> <p>• Use to desiccate regrowth occurring after defoliation or desiccation.</p> <p>• Because regrowth is difficult to control, thorough coverage with the full recommended rate is necessary. • Control is dependent on growing conditions and desiccation of small new regrowth may not always be complete.</p> <p>• If regrowth is excessive, use higher rate.</p>

EASTER LILIES (Field grown)	Preemergence	1.7-2.7 pts.	Ground: 10 gals.	—	• Do not exceed two applications per year.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
FALLOW LAND Prior to planting of any crops.	Preplant Broadcast to Fallow Land	1.0-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year, during the fallow period. • Fallow land may be between operations such as disking, ripping, plowing, leveling, irrigating or listing for ground preparation purposes. • Use for the control of weeds such as bluegrass, chickweed, henbit, downy brome, ryegrass, cheatgrass, dog fennel, tansy mustard, London rocket, sowthistle, rescue brome, wild oats, volunteer cereals and other winter annuals and for suppression of perennial weeds or sedges. • For weeds approaching the maximum size of 6", the higher rate may be used. • No more than 2 applications should be made during the fallow period. • Prior to application allow maximum weed emergence to maximize the benefit of this use. • Adhere to the preharvest intervals and other crop specific restrictions for planted crops elsewhere on this label.
GRASSES (For seed) (For use in seedbed preparation)	Preplant, at Planting, or Preemergence	1.3-2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Prepare the seedbeds and allow weeds to germinate. • Apply PARAQUAT CONCENTRATE when weeds are at the 3-5 leaf stage. • Applications may be repeated as necessary (but only up to 3 applications per year) prior to grass emergence. • Do not graze treated areas or use the seed or straw from treated areas for animal feed or bedding.
GUAR (Preharvest desiccation)	Preharvest	1.3 pts.	Ground: 10 gals.	4	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply after the pods are fully mature. • Do not graze treated areas or use the treated forage for animal feed.
GUAVA	Directed Spray	2.5 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • Do not allow spray to contact green stems, fruit or foliage. • Do not graze treated areas. • Do not feed cover crops grown in treated areas to livestock. • Retreatment or spot spraying may be necessary for mature woody weeds, late-germinating weeds and grasses, and perennials.
HOPS (ID, OR, & WA only)	Directed Spray and/or Suckering and	1.3 pts.	Ground: 10 gals.	14	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Retreatment of spot treatment may be necessary.

	Stripping.				<ul style="list-style-type: none"> • Do not allow spray to contact green stems, foliage, flowers, or cones as injury may result. • Do not allow animals to graze in treated hopyards. • Silage and hop vine refuse may be fed to livestock. • Spray only the basal 2 ft. of the vines for sucking and stripping. Repeat as necessary, but only up to 3 applications per season. • Experience with varieties other than Cascade, Yakima Cluster, and Bullion is limited. If using PARAQUAT CONCENTRATE on other varieties than these, test the use pattern on a small number of vines of each variety to determine sensitivity to injury. Do not use on unlisted varieties if unacceptable crop injury occurs. • Chemical Pruning: Spray when vines are less than 3 ft. tall to burn back existing vines and obtain even emergence of subsequent vines. • APPLICATION TO HOP VINES LESS THAN 6 FT. TALL MAY CAUSE UNACCEPTABLE INJURY.
LENTILS NOT REGISTERED FOR USE ON LENTILS IN CALIFORNIA.	Harvest Aid	0.8-1.3 pts.	Ground: 20 gals. Air: 7 gals.	7	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Add nonionic surfactant at 0.25% v/v (2 pts./100 gals.) of the finished spray volume. • May also be applied as a split application. DO NOT make more than 2 applications or exceed a total of 1.3 pts./A. The split application may improve coverage. • Apply when crop is mature and at least 80% of the pods are yellowing and mostly ripe with no more than 30% of the leaves still green in color. • DO NOT apply when weather conditions favor spray drift. To reduce spray drift a drift control agent may be included.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
MINT (Peppermint, Spearmint)	Dormant Season	1.3-2.0 pts.	Ground: 10 gals. Air 5 gals.	-	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • For suppression of weeds such as groundsel, chickweed, downy brome, bluegrass, Italian ryegrass, prickly lettuce. • Apply when crop is dormant before spring growth begins and when weeds are less than 6" tall. • Do not apply more than 2.0 pts./A per dormant season. • May be tank mixed with Sinbar® Herbicide (terbacil) weed killer for improved contact activity and residual control of Italian ryegrass, prickly lettuce and groundsel. Apply this tank mixture no more than once per season. Always refer to Sinbar (terbacil) label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
ONIONS (seeded) AND GARLIC	Preplant/ Preemergence	1.7-2.7 pts.	Ground: 10 gals.	60 200 (CA only)	<ul style="list-style-type: none"> • Do not make more than 1 application per year. • For heavy weed infestations or wild oat control use the higher rate. Apply only one application per season at the 2.7 pts./A dosage.

					<ul style="list-style-type: none"> • Allow maximum weed and grass emergence prior to treatment but apply prior to crop emergence. • Apply a maximum of 2.7 pts./A per season.
PASSION FRUIT	Directed Spray	2.5 pts.	Ground: 10 gals.		<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • If bark is still green at application time, use a shield or wrap vine. • Pick all fruit off the ground prior to application if application is to be made during harvest season. • Do not allow animals to graze on treated areas. • It may be necessary to retreat or spot treat.
PEANUTS	Broadcast At Ground Crack Postemergence	5.4-10.8 fl. oz.	Ground: 10 gals.		<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • To control or suppress small (1-6") emerged annual grass and broadleaf weeds in peanuts at ground crack. A second application may be made up to 28 days after ground crack. • For at-ground crack use, PARAQUAT CONCENTRATE can be tank mixed with Pursuit Herbicide or Dual MAGNUM for residual weed control. • Always refer to the Pursuit or Dual Magnum label for a list of weeds controlled, application rates, necessary precautions, and use limitations. • Make no more than 2 applications per season and do not apply a total of more than 10.8 fl. oz. of product per acre per season. • Crop foliage sprayed will be injured in the form of bronzing and crinkling, but the crop will recover and develop normally. • Do not apply by air.
PEANUTS Basagran® Herbicide Tank Mix	Broadcast At Ground Crack Postemergence	5.4-10.8 fl. oz.	Ground: 10 gals.	---	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Tank mix PARAQUAT CONCENTRATE with Basagran at 1 pt./A. for improved control of weeds such as cocklebur, bristly starbur, smartweed and prickly sida. • This tank mix can be applied at the ground crack stage of peanuts. A second application may be made up to 28 days after ground crack. • Make no more than 2 applications per season and do not apply a total of more than 10.8 fl. oz. of product per acre per season. • Crop foliage sprayed will be injured in the form of bronzing and crinkling, but the crop will recover and develop normally. • Always refer to the Basagran label for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • If peanuts show injury (leaf phytotoxicity and/or plant stunting) produced by any other herbicide treatment, do not apply this tank mix as injury may be enhanced and/or prolonged.

					<ul style="list-style-type: none"> • During prolonged periods of drought or unseasonably cold weather do not apply this tank mix as unsatisfactory weed control may result. • Do not apply by air.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
PEANUTS Butyrac® Herbicide or Butoxone® 200 Herbicide Tank Mix	Broadcast Postemergence	5.4-10.8 fl. oz.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • For improved control of weeds such as cocklebur, sicklepod and morningglory, tank mix PARAQUAT CONCENTRATE with 8-16 oz. (0.125-0.25 lbs.) per acre of Butyrac or Butoxone 200. • Do not apply a total of more than 10.8 fl. oz. of product per season and make no more than 2 applications per season • Crop foliage sprayed will be injured in the form of bronzing and crinkling but the crop will recover and develop normally. • Always refer to the Butyrac or Butoxone 200 labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not apply by air.
PIGEON PEAS (Puerto Rico only)	Directed Spray	1.3 pts.	Ground: 10 gals.	60	<ul style="list-style-type: none"> • Do not make more than 1 application per year. • Avoid contact with pigeon pea foliage. • Do not make more than 1 application per season. • Do not graze treated areas or feed treated forage to livestock. • Cannery waste can be fed to livestock.
PINEAPPLE	Directed Spray	1.3-2.7 pts.	Ground: 10 gals.	20	<ul style="list-style-type: none"> • Do not exceed 3 applications per season. • More mature weeds may require retreatment.
POTATO	Preplant or Preemergence Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply up to ground cracking stage, before potatoes have emerged.
POTATO (California, Washington, Oregon, Idaho only; used alone)	Preplant Broadcast	0.4-0.7 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For control of volunteer barley in preformed seedbeds.
POTATO Fresh Market Only	Broadcast	0.7-1.3 pts.	Ground: 20 gals.	3	For Fresh Market Potatoes Only. (Fresh Market Potatoes include potatoes that are sent directly from the field to a consumer, grocery store,

<p>Preharvest vine killing and weed desiccation.</p> <p>For Use Only in the states of: Colorado, Delaware, Idaho, Illinois, Indiana, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, Nevada, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Utah, Washington, Wisconsin and Wyoming</p>				<p>or processor for use.)</p> <ul style="list-style-type: none"> • DO NOT make more than 2 applications per year. • DO NOT use on potatoes that will be stored as tuber decomposition may result. • Potatoes must be harvested promptly after desiccation and processed or consumed immediately. • DO NOT apply to drought stressed potato vines. • DO NOT use to desiccate the vines of seed potatoes as seed pieces may fail to germinate and grow normally. • DO NOT pasture livestock in treated potato fields. • DO NOT exceed 2.6 pts./A per season. • Begin application when leaves begin to turn yellow. • Immature potato foliage is tolerant to PARAQUAT CONCENTRATE. However, desiccation will not be complete under this condition. • Use 1.3 pts./A rate where quick vine kill is desired. • For dense vine growth, use 2 applications of 0.6 pt/ A. Split applications must be applied a minimum of five days apart.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
RICE	Preplant or Preemergence Broadcast	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2.0 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply as a broadcast spray before, during or after planting, but before crop emergence. When vegetation is dense, use higher rates and spray volumes. • Seeding should be done with a minimum amount of soil disturbance. • This product will not control weeds and grasses emerging after application. Crop plants emerged at time of application will be killed. • PARAQUAT CONCENTRATE may be tank mixed with other herbicides registered for this use for improved or extended weed control. Always refer to the tank mix product label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not flood/flush within 48 hours of application in order to ensure complete kill of vegetation. If cool, cloudy and/or wet weather delays speed of kill, do not flood/flush until complete kill is evident.
SAFFLOWER	Preplant or Preemergence Broadcast or Banded Over Row	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply before, during and after planting but before crop emergence.
SAFFLOWER (California only)	Preplant Broadcast	0.7 pt.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For control of volunteer barley in preformed seedbeds.

			Air: 5 gals.		
SMALL GRAINS (Barley, wheat)	Preplant or Preemergence	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	• Do not make more than 3 applications per year.
SMALL GRAINS (Wheat Only) Hoelon® 3EC Tank Mix	Preplant or Preemergence	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	• Do not make more than 3 applications per year. • A tank mix with Hoelon 3EC will improve grass control. • Apply when weeds are actively growing and 1-6" in height. Weeds 6 inches or taller may not be controlled. • Do not apply this tank mix to barley as crop injury may result. • Always refer to the Hoelon 3EC label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
SORGHUM (Grain)	Preplant/ Preemergence Broadcast or Band	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	48 (grain) 20 (forage)	• Do not make more than 3 applications per year. • To allow maximum weed and grass emergence, seedbeds should be formed as far ahead of planting as possible • Seeding should be done with a minimum amount of soil disturbance.
SORGHUM (Grain) Atrazine & 2,4-D ester [Low Volatile] Tank Mix	Preplant or Preemergence	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.		48 (grain) 20 (forage)	• Do not make more than 3 applications per year. • PARAQUAT CONCENTRATE may be tank mixed with Atrazine for improved preemergence or residual weed control. The addition of 2,4-D ester (Low Volatile) may assist in the suppression of perennial and annual broadleaf weeds emerged at the time of application. Always refer to the specific product label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
SORGHUM (Grain) Harmony® Extra Herbicide Tank Mix	Preplant	1.3-2.5 pts.	Ground: 10 gals.	48 (grain) 20 (forage)	• Do not make more than 3 applications per year. • For improved weed control, PARAQUAT CONCENTRATE may be tank mixed with Harmony Extra. • Always refer to the Harmony Extra label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.

Crop	PARAQUAT CONCENTRATE		Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
	Use Pattern	Rate Per Acre			
SORGHUM (Grain)	Postemergence Directed (Including Hooded or Shielded)	0.7-1.3 pts.	Ground: 10 gals.	48 (grain) 20 (forage)	• Do not make more than 2 applications per year. • Apply when weeds are actively growing. • Use higher rate on larger or hard to control weeds. Weeds 6" or taller may not be controlled. • Severe damage and/or complete kill can occur if spray contacts sorghum plants. • Do not exceed 2 postemergence-directed applications or exceed a total of 5.3 pts. PARAQUAT CONCENTRATE per season. HOODED OR SHIELDED SPRAYERS • To avoid excessive crop phytotoxicity, use a hooded or shielded sprayer with skids or wheels on the spray boom to maintain spray height.

					<ul style="list-style-type: none">• Apply by directing spray between the rows and by using hooded or shielded sprayers to prevent spray contact with crop plants. <p>DIRECTED SPRAY WITHOUT HOODED OR SHIELDED SPRAYERS</p> <ul style="list-style-type: none">• Apply when sorghum is at least 12" tall when naturally standing.• Do not exceed 30 psi nozzle pressure or spray under conditions which may cause excessive drift.• Use precision directed-spray application equipment adjusted so that no more than the lower 3" of the sorghum stalk is contacted by the application spray.• Some crop injury will occur. The degree of injury is related to the precision of application and spraying conditions.																		
SOYBEANS	Preplant or Preemergence	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none">• Do not make more than 3 applications per year.• Do not exceed a total of 4.0 pts. of PARAQUAT CONCENTRATE per season.• Apply as a broadcast spray before, during or after planting, but before crop emergence. • PARAQUAT CONCENTRATE may be tank mixed with the following herbicides for improved burndown or residual control: <table><tr><td>2,4-DB</td><td>Lorox</td></tr><tr><td>Canopy Dual</td><td>Lorox Plus Prowl</td></tr><tr><td>MAGNUM</td><td></td></tr><tr><td>Goal</td><td>Pursuit Herbicide</td></tr><tr><td>Harmony Extra</td><td>Scepter Herbicide</td></tr><tr><td>{Preplant Only}</td><td>Sencor Herbicide</td></tr><tr><td>Lasso</td><td>Surflan® Herbicide</td></tr><tr><td>Lexone</td><td>Turbo Herbicide</td></tr><tr><td>Linex</td><td></td></tr></table> <ul style="list-style-type: none">• The rate of this product to be used in these tank mixtures is dependent on weed height and growing conditions. Where weed canopy is dense or under dry conditions, use the highest recommended rate of PARAQUAT CONCENTRATE. Always refer to the respective product label(s) for a list of weeds controlled, rates of applications, directions for use, limitations, and restrictions.• The lower application rate may be used when weeds are less than 4" tall and a selective postemergence spray or cultivation will be made within 3 weeks after planting.• Seeding should be done with a minimum amount of soil disturbance.• Do not graze or harvest for forage or hay before the R3 stage of soybean development (early pod).	2,4-DB	Lorox	Canopy Dual	Lorox Plus Prowl	MAGNUM		Goal	Pursuit Herbicide	Harmony Extra	Scepter Herbicide	{Preplant Only}	Sencor Herbicide	Lasso	Surflan® Herbicide	Lexone	Turbo Herbicide	Linex	
2,4-DB	Lorox																						
Canopy Dual	Lorox Plus Prowl																						
MAGNUM																							
Goal	Pursuit Herbicide																						
Harmony Extra	Scepter Herbicide																						
{Preplant Only}	Sencor Herbicide																						
Lasso	Surflan® Herbicide																						
Lexone	Turbo Herbicide																						
Linex																							
SOYBEANS 2,4-D ester (Low Volatile) Tank Mix	Preplant or Preemergence	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none">• Do not make more than 3 applications per year.• Apply 2,4-D ester (Low Volatile) at 0.35-0.475 lbs. a.i./A at least 7 days prior to planting. • Apply 2,4-D ester (Low Volatile) at 0.475-0.95 lbs. a.i./A at least 30 days prior to planting. • Do not apply 2,4-D ester (Low Volatile) prior to planting soybeans if you are not able to accept the results of soybean injury																		

		Weeds 6": 2-2.7 pts.			including possible loss of stand and yield. • Do not use amine formulation as PARAQUAT CONCENTRATE activity may be reduced. • May be tank mixed with residual herbicides listed above. • Always refer to the 2,4-D ester (Low Volatile) label for weeds controlled, rates of application, directions for use, limitations, and restrictions.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
SOYBEANS	Postemergence Directed Spray (Includes Hooded or Shielded)	3.0-5.3 fl. oz.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply when weeds are actively growing. • Use the lower rate of PARAQUAT CONCENTRATE for control of seedling johnsongrass, crabgrass, goosegrass, Brachiaria, Texas millet and pigweed less than 2" tall. • For control of 2-4" red rice, Brachiaria, barnyard grass, crabgrass, goosegrass, seedling johnsongrass, giant foxtail, and fall panicum, use 5.3 fl. oz. of PARAQUAT CONCENTRATE. • Use 5.3 fl. oz. of PARAQUAT CONCENTRATE for control of 2-3" sicklepod, purslane, pigweed, cutleaf ground cherry, and common ragweed. • Apply PARAQUAT CONCENTRATE at 5.3 fl. oz./A plus 0.2 lb. active ingredient per acre of a 2,4-D formulation for control of 2-4" grasses in mixture with common cocklebur, morningglory, and red rice. • Always refer to the 2,4-D label for weeds controlled, rates of applications, directions for use, limitations, and restrictions • Do not graze or harvest for forage or hay. • If necessary, make a second and final application 7-14 days later. <p>HOODED OR SHIELDED SPRAYERS</p> <ul style="list-style-type: none"> • Apply by directing spray between the rows and using hooded or shielded sprayers to prevent spray contact with crop plants. • Use higher rate on larger (less than 6") or hard to control weeds. Weeds 6" or taller may not be controlled. • Severe damage and/or complete kill can occur if spray intentionally or accidentally (including drift of fine droplets) contacts the plants. <p>DIRECTED SPRAY WITHOUT HOODED OR SHIELDED SPRAYERS</p> <ul style="list-style-type: none"> • Do not treat on soybeans that are less than 8" tall. • Use precision directed spray application equipment adjusted so that no more than the lower 3" of the soybean plant is contacted by the application spray. • Do not exceed 30 psi nozzle pressure or spray under conditions which may cause excessive drift. • Some crop injury will occur. The degree of injury is dependent upon the precision of

					application and spraying conditions.
SOYBEANS	Harvest Aid	5.4-10.7 fl. oz.	Ground: 20 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Indeterminant varieties: Applications should be made when at least 65% of the seed pods have reached a mature brown color or when seed moisture is 30% or less. Determinant varieties: Apply when plants are mature, i.e., beans are fully developed, 1/2 of leaves have dropped, and remaining leaves are yellowing. • Injury will occur on immature soybeans. • Mature cocklebur, especially drought-stressed plants, are tolerant to PARAQUAT CONCENTRATE and desiccation will not be complete. Always use the higher rate when treating cocklebur. • Do not apply within 15 days of harvest. • Do not graze or harvest for forage or hay.
STRAWBERRIES	Postemergence Directed Spray	1.3 pts.	Ground: 20 gals.	21	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Direct spray between the rows, using shields to prevent spray contact with crop plants. • Do not allow spray to contact strawberry plants as injury or excessive residues may result. • Do not apply more than 3 times per season. • Do not graze livestock in treated areas.
SUGAR BEETS	Preplant or Preemergence	1.3-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For heavier weed infestations, use the higher label rate. • Seeding or transplanting should be done with a minimum amount of soil disturbance. • Crop plants emerged at time of application will be killed. • Can be used in fallow bed/stale seedbed for weed control. • Seedbeds or plantbeds should be formed as far ahead of treatment as possible to permit maximum weed emergence.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
SUGARCANE	Postemergence Directed Spray (includes Hooded or Shielded)			—	General Comments <ul style="list-style-type: none"> • Do not make more than 2 applications per year, except applications made by air in Florida and Texas in which the maximum number of applications allowed is 1 per year. • Apply as a hooded, shielded or directed spray to avoid contact with cane foliage to prevent leaf burn and yield reduction. • If necessary, a second and final application can be made when new weed growth is 2-6" high. • Do not graze treated areas or feed treated forage to livestock.
—Florida—		1.3 pts.	Ground: 50 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Optimum results can be obtained by applying in early spring (March-April) when weeds are small.

					<ul style="list-style-type: none"> • Do not apply after June 1 as cane growth may be stunted and yields reduced.
—Hawaii—		1.3 pts.	Ground: 20 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Do not apply after cane rows have closed in.
—Louisiana—		0.7-2.0 pts.	Ground: 20 gals.	30	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • For tiller control, apply when tillers are less than 18" high. • For heavier weed infestations or tiller growth use the higher rate.
—Florida & Texas—	Harvest Aid	0.4-0.7 pts.	Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 1 application per year. • Under cool, cloudy weather conditions use higher rate. • Apply 3-14 days before burning and harvest.
SUNFLOWER	Preplant or Preemergence Broadcast or Banded Over Row	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply before, during, or after planting but before crop emergence.
SUNFLOWER	Preharvest Desiccation Broadcast	0.8-1.3 pts.	Ground: 10 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Apply when sunflower seeds reach physiological maturity (when seed moisture is 35% or lower). For many varieties, this is equivalent to the time when the back of the heads are yellow and the bracts are turning brown. • Do not graze treated areas or feed treated forage to livestock. • When crop stands or weed infestations are heavy, use the higher label rate.
TARO, DRYLAND (Hawaii Only)	Postemergence Directed Spray	1.3-2.1 pts.	Ground: 10 gals.	180	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Do not allow spray to contact the taro plants as injury may result. • Make the first application when weed growth is 1-4" high. • Weeds emerging after the application will not be controlled. • A single re-treatment may be made; however, do not harvest dryland taro within 6 months of the last application.
TREE PLANTATION ESTABLISHMENT Deciduous and Conifers	Preplant Broadcast	1.3-2.7 pts.	Ground: 20 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • To allow maximum emergence of weeds prepare ground early. • Apply prior to planting. Plant with minimal soil disturbance. • For heavier weed infestations, use the higher application rate. • For improved burndown or residual control, tank mix PARAQUAT CONCENTRATE with other herbicides labeled for this use. • Always refer to the specific tank mix herbicide label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not apply in less than 20 gals./A as weed control will be reduced.

Crop	Use Pattern	PARAQUAT CONCENTRATE	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
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		Rate Per Acre			
TREES AND VINES	Directed Spray	1.7- 2.7 pts.	Ground: 10 gals.		<ul style="list-style-type: none"> • Do not make more than 5 applications per year, except for: Apricots, Cherries, Kiwi Fruit, Nectarines, Peaches, Plums, no more than 3 applications per year; Olives, no more than 4 applications and Pistachios, no more than 5 applications but only 2 applications after shells split. • Do not allow spray to make contact with green stems (except suckers), fruit or foliage. • Use the shield or wrap plant when spraying around young trees or vines. • Do not graze treated areas. • Do not feed covered crops grown in treated areas to livestock. • Do not apply when figs, nuts or olives to be harvested are on the ground. • For apricots - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season. • For cherries - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season. • For figs - Do not harvest within 13 days after application and do not exceed 5 postemergence directed applications per season. • For grapes - Treat when sucker growth is no more than 8" long. Late season applications to weeds should be made to avoid contact with desirable foliage. • For kiwi fruit - Do not treat more than 3 times per year. • For mature woody weeds, perennial weeds, late germinating weeds and green suckers, retreatment or spot treatment may be necessary. • For nectarines - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season. • For olives - Do not harvest within 13 days after application and do not exceed 4 postemergence directed applications per season. • For peaches - Do not harvest within 14 days after application, and do not exceed 3 postemergence directed applications per season. • For pistachios - Do not exceed 2 applications after shells split. • For plums - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season.
Orchards, Vineyards, Windbreak, Shade & Ornamental Trees: Acerola Apples Apricots Avocados Bananas Beechnut Brazil nut Butternut Calamondin Cashew Cherries Chestnut Chinquapin Citrus citron Coffee Figs Filberts Grapefruit Grapes Hickory nut Kiwi fruit Kumquat Lemon Lime Macadamia nuts Mandarin Nectarines Olives Orange (sour & sweet) Papayas Peaches Pears Pistachios Plums Prunes Pummelo Satsuma mandarin Walnuts Other shade and ornamental trees such as arborvitae, ash, elm, fir, oak, pine, etc.				Apricots 28 Cherries 28 Figs 13 Kiwi Fruit 14 Nectarines 28 Olives 13 Peaches 14 Pistachios 7 Plums 28	

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
TREES AND VINES Tank Mixes	Directed Spray	1.7-2.7 pts.	Ground: 10 gals.	Always refer to other Tank Mix labels	<ul style="list-style-type: none"> Do not make more than 5 applications per year, except for: Apricots, Cherries, Kiwi Fruit, Nectarines, Peaches, Plums, no more than 3 applications per year; Olives, no more than 4 applications and Pistachios, no more than 5 applications but only 2 applications after shells split. This product may be tank mixed with registered residual herbicides listed below for combined emerged and residual weed control. PARAQUAT CONCENTRATE may be tank mixed with the following herbicides: Devrinol® Herbicide Goale® Karmex® Krovar® Herbicides Princep® Sinbar® Solicam® Herbicide Surflan® Always refer to other herbicide labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
TYFON (New Hampshire only)	Preplant Preemergence	1.7-2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> Do not make more than 3 applications per year. Seeding should be done with a minimum of soil disturbance. Weeds and grasses emerging after treatment will not be controlled. Crop plants emerged at time of application will be injured.
VEGETABLES (Seeded or Transplanted) Beans (Lima, Snap) Broccoli Cabbage Cantaloupe Carrots Cauliflower Chayote fruit Chinese cabbage Chinese waxgourd Citron melon Collards	Preplant Preemergence	1.3-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> Do not make more than 3 applications per year. Seedbeds or plantbeds should be formed as far ahead of treatment as possible to permit maximum weed emergence. Banded or broadcast treatment applications can be made before, during or after planting but prior to the crop emergence. For heavier weed infestations, use the higher rate. Seeding or transplanting should be done with a minimum amount of soil disturbance. Crop plants emerged at time of application will be killed. PARAQUAT CONCENTRATE can be used in fallow bed/stale seedbed

Cucumber Eggplant Gherkin Gourd, Edible Groundcherry Lettuce Momordica spp. Musk melons Peas Pepino Peppers Pumpkin Squash Sweet Corn Tomatillo Turnips Tomatoes Watermelons					for weed control alone or tank mixed with Goal. Always refer to the Goal label for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not harvest tomatoes within 30 days after application.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
VEGETABLES Eggplant Tomatoes Peppers	Directed Spray	1.3 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For control or suppression of emerged weeds between rows after crop establishment. • Use precision directed spray application equipment adjusted to prevent spray contact with crop plants. Do not exceed 30 psi nozzle pressure. Do not spray under conditions which may cause excessive drift. • Apply when weeds are succulent and weed growth is less than 6". • Do not apply more than 3 applications per season. • Do not allow animals to graze in treated areas. • Do not harvest tomatoes within 30 days after application.
VEGETABLES Tomatoes	After Final Harvest	1.6-2.5 pts.	Ground: 40-120 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Apply in 40-120 gallons of water per acre (0.62-0.93 lb. a.i./A). • Add NIS containing 75% or more surface active agent at 0.125 v/v (1 pt./100 gals. spray solution). • To ensure maximum herbicide burndown, tomato vines should be thoroughly covered. • PARAQUAT CONCENTRATE may be deactivated and less efficacious when dirty or muddy water is used. • To aid in the removal of sweet potato

					whitefly, burn tomato vines with propane burners as soon as possible after the vines have dried down sufficiently.
VEGETABLES (California, Washington, Oregon, Idaho only) Lettuce Melon Sugar Beets Tomatoes	Broadcast	0.4-0.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • DO NOT apply more than a total of 3 lbs. active ingredient (paraquat) per acre per season. • To minimize drift, do not use nozzles or nozzle configurations which produce fine spray droplets (mist). • Do not make more than 2 applications per year. • For control of volunteer barley in preformed seedbeds. • Do not harvest tomatoes within 30 days after application.
VEGETABLES Rhubarb	Dormant	1.7-2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not exceed 2 applications per year. • Apply during dormant season before buds in crown begin to grow.

RESIN SOAKING

Pines including Loblolly, Shortleaf, Longleaf, Slash, Virginia, Pond, Pitch, and Spruce Pines.

Tree Selection - Trees should be selected from stands on sites not subject to stress from periods of extreme drought stress because the desiccating effect of PARAQUAT CONCENTRATE is accentuated during drought, causing a reduction in the amount of oleoresin deposited in the xylem. Vigorous, non-stagnated natural or planted stands should be selected. Plan PARAQUAT CONCENTRATE treatments in stagnated or commercial timber stands, not sooner than three years after a commercial thinning.

Application Directions To bring the treatment into contact with sapwood (or xylem), apply water-diluted PARAQUAT CONCENTRATE to an appropriate wound in the tree trunk.

Bark Streaks or Cuts: Use a standard or rotary bark hack or a chainsaw shipping tool (used in naval stores work) to remove a single 1-inch wide streak of bark about 1-2 ft. from ground level. Do not exceed 1/3 of the circumference of the tree. Serious girdling of the trunk and premature death of the tree can result if multiple streaks or cuts are made. Apply a coarse spray (about 1.7-5.0 ml) PARAQUAT CONCENTRATE solution (1-5% cation, wt./wt. basis) to runoff to the exposed xylem, using a low-pressure sprayer. The amount of spray required per cut depends on tree circumference and the length of cut or streak. For example, for a 9-inch diameter tree, using 3 ml of 2 or 4% PARAQUAT CONCENTRATE solution will cover the 1-inch wide streak and will result in application of 60 or 120 mg per streak.

Time of Treatment: Less severe pine beetle infestation and longer tree life usually result during cool season treatments under non-drought seasons. However, resin soaking can occur from treatments made any time of the year.

Interval between Treatment and Tree Harvest: There should be at least a 6-month interval between application of PARAQUAT CONCENTRATE and tree harvest. However it is preferable the interval is from 12-24 months, even though intervals of over 6 months may not be possible under conditions of drought or serious pine beetle attacks possibly making early harvest necessary.

With this treatment, there is a potential for promoting beetle attack or causing premature death of the tree. At high dosage rates, desiccation of the xylem tissue, rather than the desired resin

soaking, may occur.

Note: This type of treatment may reduce stem growth during between treatment and tree harvest.

Dilution Table for PARAQUAT CONCENTRATE (3.0 lbs. cation per gallon)	
Concentration of Cation Desired (wt./wt. basis)	Add the Following No. Gal. of Water to 2/3 Gallon of PARAQUAT CONCENTRATE
0.2%	118.8
0.5%	46.8
1.0%	22.9
2.0%	10.9
3.0%	6.9
4.0%	4.9
5.0%	3.7

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CONSERVATION RESERVE, FEDERAL SET-ASIDE, CONSERVATION COMPLIANCE PROGRAMS (For use in compliance with the Federal Conservation Reserve Program or Federal set-aside programs)	Broadcast	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • PARAQUAT CONCENTRATE may be tank mixed with other herbicides registered for this use for improved emerged weed control or extended weed control. Always refer to tank mix herbicide labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
NONCROP USES	Broadcast or Spot Treatment	1.7- 2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Repeat applications as necessary but do not make more than 10 applications per year. • To be used in noncrop areas including public airports, electric transformer stations, pipeline pumping stations, around commercial buildings, storage yards and other installations, and fence lines. • Avoid spray contact with the foliage of ornamentals or desired plants.

PASTURE RESEEDING For suppression of existing sod and undesirable emerged broadleaf weeds and grasses prior to or at time of planting grasses or forage legumes	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	See specific geographic recommendation	<ul style="list-style-type: none"> Do not make more than 3 applications per year. West of Cascade and Sierra Nevada Mountains Apply in October through December after first fall rains and after weeds have emerged and sod has started new growth. Apply on moderately to heavily grazed areas for best seeding results. Do not use in heavy sod and weed growth areas. East of Rocky Mountains Use the 1.3 pts rate on vigorous or coarse sod species such as brome grass. Apply prior to, or at time of seeding grasses or forage legumes. Apply only to grazed or mowed pastures not more than 3" in height at time of treatment. Bermudagrass or Bahiagrass Sods Apply in late summer or early fall to sod not exceeding 3" in height. For control of emerged little barley, apply in February or March before the mid-boot stage of little barley. Bermudagrass and Coastal Bermudagrass Pastures Apply when bermudagrass is dormant. For control of little barley, apply before the mid-boot stage. Do not mow for hay until 40 days after treatment.
For control of endophyte-fungus-infected fescue forage legume/grass mixture and other grass pastures	Broadcast (Split Application)	0.7-1.3 pts. followed by 0.7-1.3 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> Do not make more than 2 applications per year. Use split applications of 10-21 days apart if necessary. Do not exceed 2.6 pts./A total in preparation for reseeding. For spring plantings, the initial application of 0.7-1.3 pts. may be made the previous fall. Apply when fescue is actively growing and no more than 4" high. To reduce the infestation of endophyte-infested grass, do not allow fescue to go to seed starting with the preceding year's crop.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
*For prickly pear desiccation in pastures *Not for use in California	Spot Sprays	0.8 fl. oz. per gallon of water	Spray to wet weed foliage	—	<ul style="list-style-type: none"> Do not make more than 10 applications per year. Hand-held equipment such as knapsacks backpack sprayers, pump-up pressure sprayers, hand-guns, and hand-wands, can be used to direct the spray onto weed foliage so that the spray

					<p>thoroughly wets foliage.</p> <ul style="list-style-type: none"> • Mix 0.8 fl. oz. of PARAQUAT CONCENTRATE and 1/3 fl. oz. of a nonionic surfactant per gallon of water. • Completely and uniformly cover all green prickly pear foliage with spray. • Apply in May through September for best desiccation results. • Do not use more than 1.6 pts. of PARAQUAT CONCENTRATE per acre per year. • Apply only to pastures with no more than 3" of height at time of treatment. • Tank mix with Grazon P+D Specialty herbicide at a rate of 1-2 fl. oz. per gallon of water for improved desiccation and perennial control of prickly pear. • Always refer to the Grazon P+D Specialty herbicide label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
<p>*For Juniper Species leaf moisture reduction or desiccation prior to Prescribed burning of pastures *Not for use in California</p>	Broadcast	1.3 pts.	Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 10 applications per year. • Use only in conjunction with prescribed burning as recommended and monitored by local SCS or University and Extension Range Specialists. • Apply during hot, dry weather conditions (generally July and August). • Use 2% v/v nonionic surfactant in a minimum of 5 gal spray solution. • Monitor juniper leaf moisture content. Maximum leaf moisture reduction generally occurs 3-4 weeks after PARAQUAT CONCENTRATE application. • Significant soil moisture and/or wet weather conditions prior to or after application will decrease the potential for juniper crown burns. • Reduction in leaf moisture can be adversely affected by cool or humid weather conditions.. • Do not graze livestock after application or prior to burning.
<p>*Native Pastures *Not for use in California</p>	Broadcast	1.0-1.25 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Apply PARAQUAT CONCENTRATE for control of downy and Japanese brome. • Apply in spring after 90% node formation of brome species, but before full bloom. • Emerged native perennial grasses will be burned by application, but application after 90% node formation will allow adequate time for native grasses to recover and attain maximum growth in the use season. • Do not apply more than 1.25 pts. PARAQUAT CONCENTRATE per year. • Apply only to pastures with no more than 3" of height at time of treatment.

<p style="text-align: center;">Conversion Table PARAQUAT CONCENTRATE to Be Applied</p>			
Ounces	Pints	Lb. a.i.	Acres/Gallon
2.5	0.16	0.06	51.3
4.8	0.30	0.11	26.7
5.28	0.33	0.12	24.2
5.52	0.35	0.13	23.2
10.00	0.63	0.23	12.8
11.00	0.69	0.26	11.6
11.20	0.70	0.26	11.4
12.00	0.75	0.28	10.7
16.00	1.00	0.38	8.0
20.00	1.25	0.47	6.4
20.80	1.30	0.49	6.2
24.00	1.50	0.56	5.3
28.00	1.75	0.66	4.6
32.00	2.00	0.75	4.0
40.00	2.50	0.94	3.2
43.20	2.70	1.00	3.0

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

Pesticide Storage: Store in original container and place in a locked storage area. Do not mix or store in containers, spray tanks, nurse tanks, or such systems made of aluminum or having aluminum fittings. Store at temperatures above 32°F. For Emergencies involving a Spill, Leak, Fire, Exposure, or Accident, contact: CHEMTREC at (800) 424-9300.

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal:

Do not reuse container as container is not safe for food, feed or drinking water!

Plastic containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Minibulk containers: Return empty containers for reconditioning.

WARRANTY STATEMENT IMPORTANT NOTICE - Seller warrants that this product conforms to the chemical description and is reasonably fit for purposes stated on the label when used in accordance with the directions and instructions under normal conditions of use; **but neither this warranty nor any other warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to seller, and buyer assumes the risk of any such use.**

HARVADE® is a trademark of Chemtura Corporation. AAtrex®, Ambush®, Bicep MAGNUM®, Bicep Lite II MAGNUM®, Caparol®, Cyclone®, Devrinol®, Dual MAGNUM®, E-Z Handler®, Karate®, Princep®,

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ZAPHawk@aol.com
10/11/2007 09:01 PM

To Hope Johnson/DC/USEPA/US@EPA
cc Baskel@att.net
bcc
Subject Re: EPA File Symbol 82542-G revised data matrix

Dear Ms. Johnson,

Pages 4-5 are attached. I apologize for the misunderstanding. Thanks once again.

Bob Hawk

In a message dated 10/11/2007 5:05:32 AM US Mountain Standard Time,
Johnson.Hope@epamail.epa.gov writes:
Mr. Hawk-

Thank you for the revised data matrix, however, as I stated previously,
we need pages 4 and 5 in the normal (not-blacked out) private format,
with the statement "Generic data requirements" listed in the "Guideline
Study Name" column. Please resend me pages 4 and 5 with these changes
made as soon as possible.

Thank you,

Hope A. Johnson
U.S. Environmental Protection Agency
Office of Pesticide Programs
Registration Division
Herbicide Branch
Phone: 703-305-5410
Mail Code 7505P

ZAPHawk@aol.com

10/10/2007 09:53
PM

To
Hope Johnson/DC/USEPA/US@EPA
cc
Baskel@att.net
Subject
Re: EPA File Symbol 82542-G
revised data matrix

Dear Ms. Johnson,

The revised data matrix is attached. Thank you again for your advice.

Bob Hawk
Consultant for Source Dynamics LLC

In a message dated 10/10/2007 7:46:11 AM US Mountain Standard Time,
Johnson.Hope@epamail.epa.gov writes:
Mr. Hawk/Mr. Bastian:

The Certification with Respect to Citation of Data states Cite-All. In order to cover all generic data for the active ingredient, you must cite all members of the PDSL on your data matrix. Because you have either submitted your own data, or cited specific data for the product chemistry and acute toxicology data requirements, you are not required to pay any other members of the PDSL for those data requirements. Please submit the Sept 10, 2007 version data matrix with additional pages added listing the 17 members of the PDSL (with offer to pay) for paraquat dichloride, in both public and private format. Again, if a member of the PDSL did not submit any applicable data contributing to the generic database for the active ingredient, you would not be required to pay that member unless you cited any of their studies for the acute toxicology or product chemistry data requirements. If you have any issues with this, please contact Jim Tompkins at 703-305-5697. If at all possible, please send the revised data matrix today.

Thank you,
Hope A. Johnson
U.S. Environmental Protection Agency
Office of Pesticide Programs
Registration Division
Herbicide Branch
Phone: 703-305-5410
Mail Code 7505P

See what's new at AOL.com and Make AOL Your Homepage.[attachment
"Paraquat 82542-G Matrix.pdf" deleted by Hope Johnson/DC/USEPA/US]



See what's new at AOL.com and [Make AOL Your Homepage](#). Paraquat 82542-G 4-5.pdf

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DATA MATRIX

Date: 10/10/2007	EPA Reg No./File Symbol: 82542-G	Page 4 of 5			
Applicant's/Registrant's Name & Address: Source Dynamics LLC 10039 E. Troon North Drive, Scottsdale AZ 85262		Product: Paraquat Concentrate			
Ingredient: paraquat					
Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
	Generic Data Requirements		Syngenta Crop Protection, Inc.	PAY	
	Generic Data Requirements		The Ortho Business Group/The Scotts Company	PAY	
	Generic Data Requirements		Monsanto Company	PAY	
	Generic Data Requirements		Dow Elanco	PAY	
	Generic Data Requirements		Crystal Chemical Company	PAY	
	Generic Data Requirements		Makhteshim-Agan of North America, Inc.	PAY	
	Generic Data Requirements		Spray Drift Task Force	PAY	
	Generic Data Requirements		EDM Industries, Inc.	PAY	
	Generic Data Requirements		Siron Corporation	PAY	
	Generic Data Requirements		Outdoor Residential Task Force LLC	PAY	
	Generic Data Requirements		Agricultural Reentry Task Force LLC	PAY	
	Generic Data Requirements		FIFRA Endangered Species Task Force LLC	PAY	
	Generic Data Requirements		Agricultural Handlers Exposure Task Force LLC	PAY	
	Generic Data Requirements		Griffin Corporation	PAY	
Signature: <i>Rufus Bastian</i>			Name and Title: Rufus Bastian, President	Date: 10/10/2007	


NOTE TO FILE:
EPA Registration Number 82542-3 (-G)

Although TRB-Chemistry stated in previous memos that due to the presence of an inert of toxicological significance in 82542-G, it was not considered substantially similar to the me-too 82557-1, TRB-Toxicology did not have any issue with this, other than requiring a label statement alerting the public of the presence of the inert. The presence of this inert is of issue only in the toxicological standpoint, therefore, TRB-Chemistry's objections are overruled. Dan Kenny, Chief of the Herbicide Branch, made this decision.

-Hope Johnson
10/11/2007

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DATA MATRIX

Date 10/10/2007		EPA Reg No./File Symbol 82642-G		Page 1 of 5	
Applicant's/Registrant's Name & Address: Source Dynamics LLC 10039 E. Troon North Drive, Scottsdale AZ 85262		Product Paraquat Concentrate			
Ingredient: paraquat					
Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
PRODUCT PROPERTIES: GROUP A					
830.1550	product identification and disclosure of ingredients	47091106	Source Dynamics LLC	OWN	
830.1600	description of beginning materials	47091106	Source Dynamics LLC	OWN	
830.1620	description of manufacturing process	47091106	Source Dynamics LLC	OWN	
830.1670	discussion of formation of impurities	47091106	Source Dynamics LLC	OWN	
830.1700	preliminary analysis	47106702	Source Dynamics LLC	OWN	
830.1750	certification of limits	47106702	Source Dynamics LLC	OWN	see also 8570
830.1800	enforcement analytical method	47108701	Source Dynamics LLC	OWN	
		47091102	Source Dynamics LLC	OWN	
		47091103	Source Dynamics LLC	OWN	
		47106702	Source Dynamics LLC	OWN	
PRODUCT PROPERTIES: GROUP B					
830.6302	color	47091105	Source Dynamics LLC	OWN	
830.6303	physical state	47091105	Source Dynamics LLC	OWN	
Signature 			Name and Title: Rufus Bastian, President		
			Date: 10/10/2007		


Paperwork Reduction Act Notice: The public reporting burden for this collection of information is estimated to average 0.25 hours per response for registration activities and 0.25 hours per response for reregistration and special review activities, including time for reviewing the instructions and completing the necessary forms. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Director, OPPE Information Management Division (2137), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, DC 20460. Do not send the form to this address.

DATA MATRIX

Date: 10/10/2007		EPA Reg No./File Symbol: 82542-G		Page 2 of 5	
Applicant's/Registrant's Name & Address Source Dynamics LLC 10039 E. Troon North Drive, Scottsdale AZ 85262		Product Paraquat Concentrate			
Ingredient: paraquat					
Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
830.6304	odor	47091105	Source Dynamics LLC		
830.6313	stability to normal and elevated temperatures	46098802	Sinon	PAY	46.2% technical
830.6314	oxidation / reduction: chemical incompatibility	46098802	Sinon	PAY	46.2% technical
830.6315	flammability	46098802	Sinon	PAY	46.2% technical
830.6316	explosibility	46098802	Sinon	PAY	46.2% technical
830.6317	storage stability	46098802	Sinon	PAY	Source Dynamic study in progress
830.6319	miscibility	46098802	Sinon	PAY	46.2% technical
830.6320	corrosion characteristics	44590901	Syngenta	PAY	Source Dynamic study in progress
830.6321	dielectric breakdown voltage		not applicable		
830.7000	pH	47091105	Source Dynamics LLC	OWN	
830.7050	UV / visible absorption	46098802	Sinon	PAY	46.2% technical
830.7100	viscosity	47091105	Source Dynamics LLC	OWN	
830.7200	melting point	46098802	Sinon	PAY	46.2% technical
830.7220	boiling point	46098802	Sinon	PAY	46.2% technical
Signature: <i>Rufus Bastian</i>			Name and Title: Rufus Bastian, President		
			Date: 10/10/2007		

Paperwork Reduction Act Notice: The public reporting burden for this collection of information is estimated to average 0.25 hours per response for registration activities and 0.25 hours per response for registration and special review activities, including time for reviewing the instructions and completing the necessary forms. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Director, OPPE Information Management Division (2137), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, DC. Do not send the form to this address.

DATA MATRIX

Date 10/10/2007	EPA Reg. No./File Symbol 82542-G	Page 3 of 5			
Applicant's/Registrant's Name & Address Source Dynamics LLC 10039 E. Troon North Drive, Scottsdale AZ 85262					
Product Paraquat Concentrate					
Ingredient: paraquat					
Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
830.7300	density / relative density	47091105	Source Dynamics LLC	OWN	
830.7370	dissociation constant in water	46098802	Sinon	PAY	46.2% techni
830.7550	octanol / water partition coefficient	46098802	Sinon	PAY	46.2% techni
830.7840	water solubility	46098802	Sinon	PAY	46.2% techni
830.7950	vapor pressure	46098802	Sinon	PAY	46.2% techni
ACUTE TOXICITY					
870.1100	acute oral toxicity	47091107	Source Dynamics LLC	OWN	
870.1200	acute dermal toxicity	47091108	Source Dynamics LLC	OWN	
870.1300	acute inhalation toxicity	47091109	Source Dynamics LLC	OWN	
870.2400	acute eye irritation	46098805	Sinon	PAY	
870.2500	acute dermal irritation	47091110	Source Dynamics LLC	OWN	
870.2600	skin sensitization	47091111	Source Dynamics LLC	OWN	
Signature: 					
Name and Title: Rufus Bastian, President					
Date: 10/10/2					

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W.
WASHINGTON, D.C. 20460

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DATA MATRIX

Date: 10/10/2007	EPA Reg No./File Symbol: 62542-G	Page 4 of 5
Applicant's/Registrant's Name & Address		
Source Dynamics LLC, 10039 E. Troon North Drive, Scottsdale, AZ 85282		

Ingredient: paraquat	Guideline Study Name	MRID Number	Submitter	Status	Note
Guideline Reference Number			Syngenta Crop Protection, Inc.	PAY	
			The Orlito Business Group/The Scotts Company	PAY	
			Monsanto Company	PAY	
			Dow Elanco	PAY	
			Crystal Chemical Company	PAY	
			Makhteshim-Agan of North America, Inc.	PAY	
			Spray Drift Task Force	PAY	
			EDM Industries, Inc.	PAY	
			Sinon Corporation	PAY	
			Outdoor Residential Exposure Task Force LLC	PAY	
			Agricultural Reentry Task Force LLC	PAY	
			FIFRA Endangered Species Task Force LLC	PAY	
			Residential Exposure Task Force LLC	PAY	
			Agricultural Handlars Exposure Task Force LLC	PAY	
			Griffith Corporation	PAY	
Signature: <i>Rufus Baskin</i>	Name and Title: Rufus Baskin, President	Date: 10/10/2007			



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DATA MATRIX

[illegible]

EPA Form 8570-25 (9-87) Electronics and Paper versions available. Submit only Paper version.

Public File Copy

58



ZAPHawk@aol.com
10/10/2007 09:53 PM

To Hope Johnson/DC/USEPA/US@EPA
cc Baskel@att.net
bcc
Subject Re: EPA File Symbol 82542-G revised data matrix

Dear Ms. Johnson,

The revised data matrix is attached. Thank you again for your advice.

Bob Hawk
Consultant for Source Dynamics LLC

In a message dated 10/10/2007 7:46:11 AM US Mountain Standard Time,
Johnson.Hope@epamail.epa.gov writes:
Mr. Hawk/Mr. Bastian:

The Certification with Respect to Citation of Data states Cite-All. In order to cover all generic data for the active ingredient, you must cite all members of the PDSL on your data matrix. Because you have either submitted your own data, or cited specific data for the product chemistry and acute toxicology data requirements, you are not required to pay any other members of the PDSL for those data requirements. Please submit the Sept 10, 2007 version data matrix with additional pages added listing the 17 members of the PDSL (with offer to pay) for paraquat dichloride, in both public and private format. Again, if a member of the PDSL did not submit any applicable data contributing to the generic database for the active ingredient, you would not be required to pay that member unless you cited any of their studies for the acute toxicology or product chemistry data requirements. If you have any issues with this, please contact Jim Tompkins at 703-305-5697. If at all possible, please send the revised data matrix today.

Thank you,
Hope A. Johnson
U.S. Environmental Protection Agency
Office of Pesticide Programs
Registration Division
Herbicide Branch
Phone: 703-305-5410
Mail Code 7505P



See what's new at AOL.com and [Make AOL Your Homepage](#). Paraquat 82542-G Matrix.pdf



Hope
Johnson/DC/USEPA/US
10/09/2007 01:19 PM

To "Rufus Bastian" <baskel@worldnet.att.net>
cc ZAPHawk@aol.com
bcc
Subject EPA File Symbol 82542-G revised data matrix needed

Mr. Bastian/Mr. Hawk-

It looks as though we may have found a way to move forward with your application, however, I am in need of a new data matrix. If you could take the most recently submitted data matrix (dated September 10, 2007) and add a page or two listing ALL the members of the Pesticide Data Submitters List for Paraquat dichloride (PC Code 061601) that would be great. Please note that you must list every member (except yourself) of the PDSL. You can find the list at <http://www.epa.gov/opppmsd1/DataSubmittersList/dslmain.pdf>, pages 320-322 for your chemical. I have listed the names below for your convenience:

1. Syngenta Crop Protection, Inc.
2. The Ortho Business Group/ The Scotts Company
3. Monsanto Company
4. Dow Elanco
5. Crystal Chemical Company
6. Makhteshim-Agan of North America Inc
7. Spray Drift Task Force
8. EDM Industries Inc.
9. Sinon Corporation
10. Outdoor Residential Exposure Task Force LLC
11. Agricultural Reentry Task Force
12. FIFRA Endangered Species Task Force LLC
13. Residential Exposure Joint Venture
14. Agricultural Handlers Exposure Task Force
15. Griffin Corporation
16. Sinon USA Inc.
17. Celsius Property BV/ MANA Inc.

Please submit the revised data matrix as soon as possible so that we may process your application by the PRIA date.

Thank you.

Hope A. Johnson
U.S. Environmental Protection Agency
Office of Pesticide Programs
Registration Division
Herbicide Branch
Phone: 703-305-5410
Mail Code 7505P

SD label 2/4/07

This product contains the toxic ingredient methanol at 7.9%

Restricted Use Pesticide due to acute toxicity. For retail sale to and use only by certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator's certification.

PARAQUAT CONCENTRATE

Defoliant and desiccant herbicide for the control of weeds and grasses and as a harvest aid.

NEVER PUT INTO FOOD, DRINK OR OTHER CONTAINERS.
IF SWALLOWED, TAKE IMMEDIATE ACTION AS PRESCRIBED IN FIRST AID.
SYMPTOMS ARE PROLONGED AND PAINFUL.
DO NOT USE OR STORE IN OR AROUND THE HOME.
DO NOT REMOVE CONTENTS EXCEPT FOR IMMEDIATE USE.
THE ODOR OF THIS PRODUCT IS FROM THE STENCHING AGENT WHICH HAS BEEN ADDED, NOT FROM PARAQUAT.

NET CONTENTS: _____

Active Ingredient:

paraquat dichloride (1,1'-dimethyl-4,4'-bipyridinium dichloride) 43.2%
Other Ingredients: 56.8%
Total: 100.0%

add methanol statement

Contains 3.0 pounds paraquat cation per gallon as 4.14 pounds of dichloride salt per gallon. Contains emetic and stench (odor)

KEEP OUT OF REACH OF CHILDREN

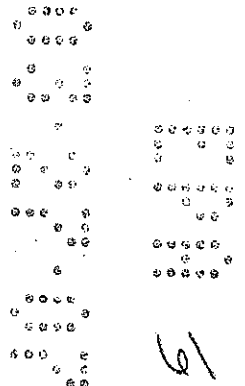
DANGER/PELIGRO

POISON

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

EPA Reg. No. 82542-x (6) (3)
EPA Est. No. _____
Product of Taiwan

Source Dynamics, LLC
10039 E. Troon North Drive
Scottsdale, AZ 85262



FIRST AID Contains Paraquat, a Bipyridinium Herbicide Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

If swallowed II	<ul style="list-style-type: none"> • Call a poison control center or doctor IMMEDIATELY for treatment advice. • SPEED IS ESSENTIAL. Immediate medical attention is required. If available, give an absorbent such as activated charcoal, bentonite or Fuller's Earth. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If inhaled I	<ul style="list-style-type: none"> • Move person to fresh air. • The odor of this product is from the stenching agent, which has been added, not from the paraquat. • If person is not breathing, call 911 or an ambulance. • Call a poison control center or doctor for treatment advice.
If in eyes I	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing III	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN Administer either activated charcoal (100g for adults or 2g/kg body weight in children) or Fuller's Earth (15% solution; 1 liter for adults or 15ml/kg body weight in children). NOTE: The use of gastric lavage without administration of an absorbent has not shown any clinical benefit. Do not use supplemental oxygen. Eye splashes from concentrated material should be treated by an eye specialist after initial treatment. With the possibility of late onset corneal ulceration, it is advised that patients with paraquat eye injuries are reviewed by an eye specialist the day after first presentation. Use treatment that is appropriate for chemical burns. Intact skin is an effective barrier to paraquat; however, contact with irritated or cut skin or repeated contact with intact skin may result in poisoning.

HOT LINE NUMBERS:

SAFETY DATA AND INFORMATION 203-573-3303
TRANSPORTATION EMERGENCY (CHEMTREC) 800-424-9300

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

3) Corrosive
A Maybe
DANGER. *1* *2* *5* *6* *8* *11*
May be fatal if swallowed. Fatal if inhaled. Do not breathe spray mist. Wear a dust mist respirator. Causes irreversible eye damage. Wear protective eyewear. Do not get in eyes or on clothing. Harmful if absorbed through skin. Avoid contact with skin. Prolonged or frequently repeated contact may cause allergic reactions in some individuals.

IMPORTANT: Inhalation is an unlikely route of exposure due to low vapor pressure and large spray droplet size, but mucosal irritation or nose bleeds may occur. Prolonged contact with this concentrated product can irritate your skin.

Personal Protective Equipment (PPE) Applicators and other handlers (other than mixers and loaders) must wear:

Long-sleeved shirt and long pants; Chemical resistant gloves – Category A (e.g., barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC) or viton); Shoes plus socks; Protective eyewear; A dust mist NIOSH-approved respirator with any N, R, P, or HE filter.

Mixers and loaders must wear:

Long-sleeved shirt and long pants; Chemical resistant gloves – Category A (e.g., barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC) or viton); Shoes plus socks; Dust mist NIOSH-approved respirator with any N, R, P, or HE filter; Chemical resistant apron; Face shield.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Controls: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, and chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is **toxic to wildlife**. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters.

Paraquat dichloride is **toxic to nontarget crops and plants** if off-target movement occurs because it desiccates all green plant tissue. Extreme care must be taken to ensure that off-target drift is minimized to the greatest extent possible. Refer to the local state laws, regulations, guidelines, and spray drift information contained in the Directions for Use section for proper application to avoid off-target movement. Do not apply under conditions involving possible drift to food, forage, or other plantings that might be damaged or the crops thereof rendered unfit for sale, use, or consumption. Do not apply when weather conditions favor drift from treated areas. To avoid drift, do not make aerial application during periods of thermal inversion.

PHYSICAL AND CHEMICAL HAZARDS

This product is **mildly corrosive to aluminum** and produces hydrogen gas which may form a highly combustible gas mixture. Do not mix or store in containers, spray tanks, nurse tanks, or such systems made of aluminum or having aluminum fittings. The product is compatible with high density polyethylene and rubber-lined steel containers.

DIRECTIONS FOR USE

Restricted Use Pesticide. It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation. Do not use around home gardens, schools, recreational parks, golf courses or playgrounds.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to use of this product that are covered by the Worker Protection Standard.

For preplant or preemergence (broadcast or banded), chemical fallow, postemergence directed spray applications, early postemergence broadcast in peanuts and dormant season applications, and "between cutting" applications in alfalfa: Do not enter or allow worker entry into treated areas during the **restricted-entry interval (REI) of 12 hours**.

For harvest aid and desiccation application: Do not enter or allow worker entry into treated areas during the **restricted entry interval (REI) of 24 hours**.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

Coveralls

Shoes plus socks
Protective eyewear
Chemical resistant gloves - Category A (e.g., barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC) or viton).

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

DO NOT enter or allow others to enter the treated area until sprays have dried.

AVOID working in spray mist.

Keep all unprotected persons out of operating areas or vicinity where there may be danger of drift.

Certain states may require more restrictive reentry intervals; consult your State Department of Agriculture for further information.

GENERAL INSTRUCTIONS AND INFORMATION

Do not apply this product through any type of irrigation system.

When **PARAQUAT CONCENTRATE** is applied at less than 10 gallons per acre finished spray volume, a drift control or spray deposition additive **SHOULD** be used. Refer to the additive label for rates of applications, directions for use, limitations, and restrictions.

SPRAY DRIFT INFORMATION

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following DRIFT MANAGEMENT REQUIREMENTS must be followed to avoid off-target drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed $\frac{3}{4}$ the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45° . Where states have more stringent regulations, they shall be observed.

The applicator should be familiar with and take into account the information covered in the Aerial Drift Reduction Advisory Information.

AERIAL DRIFT REDUCTION ADVISORY INFORMATION

Information on Droplet Size

The most effective way to reduce drift potential is to apply large droplets. The best management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environment conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

Controlling Droplet Size

- **Volume** - Use high flow rate nozzles to apply the highest spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length

For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

Application Height

Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making application at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

Wind

Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. **NOTE:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

GENERAL INFORMATION

PARAQUAT CONCENTRATE is a liquid formulation containing 3 lbs. of active ingredient per gallon. It contains a nontoxic odor to help prevent accidental ingestions. It also contains an emetic (an agent which will induce vomiting if the product is swallowed).

APPLICATION

PARAQUAT CONCENTRATE is a contact herbicide for control or suppression of a broad spectrum of emerged weeds including most small annual broadleaf and grass weeds. It can also be used to suppress perennial weeds by destroying green foliage and as a desiccant/ defoliant at harvest.

Complete coverage of target weeds is necessary to get good control because PARAQUAT CONCENTRATE is a contact-type herbicide. It is also necessary to obtain complete coverage for good crop desiccation and defoliations. Undesirable weed control and undesirable crop desiccation/defoliation will result if improper application technique and/or application to large, stressed, or mown weeds are made. Refer to the following details for specific application instructions.

Thorough coverage of all green foliage is required for efficacious weed control and crop defoliation and desiccation because PARAQUAT CONCENTRATE requires actively growing green plant tissue to function. Drought-stressed weeds, weeds with little green foliage (i.e., mowed or cut weeds), or mature woody bark of trees and vines are unaffected by application with PARAQUAT CONCENTRATE.

There is no residual soil activity to affect later-planted crops or later germinating weeds because clay and organic matter rapidly tie up PARAQUAT CONCENTRATE.

ROTATIONAL CROPS

After the last application PARAQUAT CONCENTRATE, all rotational crops may be planted immediately.

RAINFASTNESS

Rain occurring 30 minutes or more after application will have no effect on the activity of PARAQUAT CONCENTRATE because it is rapidly absorbed by the weed foliage.

USE OF A NONIONIC SURFACTANT OR CROP OIL CONCENTRATE

The following should always be added and be used at the recommended rates or there will be a reduction in efficacy of PARAQUAT CONCENTRATE.

Nonionic Surfactant: Either add a nonionic surfactant containing 50-74% surface-action agent at 0.25% v/v (2 pts./100 gals.), or add nonionic surfactant containing 75% or more surface-active agent at 0.125% v/v (1 pt./100 gals.), of the finished spray volume for ground applications. Add a nonionic surfactant at 0.25% v/v (2 pts./100 gals.) of the finished spray volume for aerial applications.

Crop Oil Concentrate: For ground applications, add a nonphytotoxic crop oil concentrate that contains 15-20% approved emulsifier, with 1.0% v/v (1 gal./100 gals.) of the finished spray volume. Add 1 pt. of crop oil concentrate per acre for aerial applications. **For cotton harvest aid, do not use crop oil concentrate when using PARAQUAT CONCENTRATE.**

NOZZLE SELECTION

The use of flat-fan nozzles is the most effective application of PARAQUAT CONCENTRATE. The use of flood nozzles may result in a reduction of weed control due to inadequate coverage because they produce large uneven droplets.

Use only flat fan nozzles when spraying less than 20 gallons of spray carrier per acre using the following table.

Recommended Nozzle Type and Spray Pressures and Setup

	Nozzle Type	
	Flat Fan	Flood
Maximum Size	8	15
Spray Pressure (at nozzle)	30-50 psi	30-50 psi
Maximum Nozzle Spacing	30"	40"
Direction of Spray Pattern	Down	Down
Maximum Speed	10 mph	10 mph
Spray Overlap (at each edge)	30%	50%

Reduced control will result if nozzles, pressures, or setups differ from the above chart.

SPRAY CARRIER

PARAQUAT CONCENTRATE may be inactivated by muddy water, or suspension-type fertilizers containing clay. Therefore, always use clean water (free of mud or clay), clear liquid nitrogen, or complete clear liquid fertilizers as the carrier when spraying this product. Never use suspension-type fertilizers containing clay as the spray carrier. Always use the higher rate of PARAQUAT CONCENTRATE and surfactant if using a complete clear liquid fertilizer containing high phosphate levels as the spray carrier.

Note: It is important that when using liquid fertilizers such as 28% N as a spray carrier, that nonionic surfactant still be used with PARAQUAT CONCENTRATE. The use of liquid fertilizer carriers are not substitutes for surfactants.

RATES OF PARAQUAT CONCENTRATE

With each use, follow recommended rates listed in the following tables. When weeds are larger or are dense, use the higher label rates. For use as a harvest aid, use higher rate when crop vegetation is dense. Do not exceed 0.50 lbs. a.i./A in a minimum of 30 gallons of spray for broadcast applications with backpack sprayers.

SPRAY VOLUME

With each use, follow recommended rates listed in the following tables. Spray volumes should be increased as necessary to obtain complete coverage of the target weed or plant without runoff from the foliage, because **the volumes listed are minimum volumes only.**

TARGET WEEDS SHOULD NOT EXCEED SIX INCHES IN HEIGHT WHEN SPRAYING LESS THAN 20 GALLONS OF SPRAY CARRIER PER ACRE.

APPLICATION TIMING

Applications should be made to small emerged weeds. Larger weeds more than 6 inches in height may be more difficult to control than weeds 1-6 inches in height. If possible, when green foliage is removed either from grazing or mowing, allow the weeds to grow 2-4 inches in height. Also, during harvesting forage or grain crops before spraying, weeds present in the field are also cut. Therefore, raise cutter bars as high as possible from the ground to cut stubble and weeds at a greater height, allowing sufficient green foliage to remain for applications.

BURNDOWN OF GRASS COVER CROPS OR VOLUNTEER CEREALS

The best results occur for control of grass cover crops or volunteer cereals when PARAQUAT

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CONCENTRATE is applied prior to tillering or after boot stage, especially with a wheat cover crop or volunteer wheat. Complete control may not be achieved with treatments made between tillering and boot stage. Complete control of perennial cover crops should not be expected.

ENVIRONMENTAL CONDITIONS

This product is active over a wide range of environmental conditions such as cool (below 55°F), cloudy or overcast weather. However these conditions will slow the activity of PARAQUAT CONCENTRATE.

SPOT SPRAYING

Refer to the following table if only small areas are to be sprayed with labeled applications.

Mixing Instructions for Small Quantities for Spot Spraying

If the Broadcast Rate Per Acre for PARAQUAT CONCENTRATE is:	Add The Following Amount of PARAQUAT CONCENTRATE to 1 Gallon of Water
1 1/2 pts.	1/3 fl. oz.
2 pts.	3/8 fl. oz.
2 1/2 pts.	1/2 fl. oz.
3 pts.	2/3 fl. Oz.

Add 1/3 - 1/2 fl. oz. of a nonionic surfactant for each gallon of spray at all times. Thoroughly wet the foliage, but not to the point of runoff when spot spraying in this manner.

TANK MIXING: ENHANCED BURNDOWN OF DIFFICULT-TO-CONTROL WEEDS AND FOR RESIDUAL WEED CONTROL

Photosynthetic Inhibitor Herbicides

To control difficult weeds, tank mix PARAQUAT CONCENTRATE with other herbicides. The addition of other photosynthetic inhibitors (PSI) herbicides will slow the activity of PARAQUAT CONCENTRATE. This allows PARAQUAT CONCENTRATE to thoroughly distribute throughout a treated leaf, thus achieving better control than if PARAQUAT CONCENTRATE was applied alone.

PARAQUAT CONCENTRATE may be applied in tank mixture with the following PSI herbicides:

AAtrex® Herbicide
Atrazine Herbicide
Bicep Lite II
MAGNUM® Herbicide
Bicep MAGNUM® Herbicide
Canopy® Herbicide
Lariat® Herbicide
Lexone® Herbicide
Linex® Herbicide
Lorox Herbicide
Lorox Plus™ Herbicide
Princep® Herbicide

Sencor® Herbicide

Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions.

Improved Weed Control with PSI's

The addition of a PSI herbicide will help improve the control of difficult weeds listed below. Make a second application for best results.

Barnyardgrass
Broadleaf signalgrass
Cheatgrass
Cocklebur
Fall panicum
Giant ragweed
Knotweed
Kochia
Lambsquarters
Malva (cheeseweed)
Marestail
Morningglory
Pennsylvania smartweed
Perennial weeds (suppression only)
Prickly lettuce
Sedges
Tansymustard
Velvetleaf
Volunteer wheat

Improved Control of Perennial and Annual Broadleaf Weeds

Tank mixing with labeled 2,4-D ester (Low Volatile), 2,4-DB or Banvel® herbicide will help improve control when perennial broadleaf weeds such as Canada thistle, bindweed, dandelion, etc., or difficult to control annual broadleaf weeds such as giant ragweed or morningglory are present. Reduced grass control may be achieved when tank mixing the amine formulation of 2,4-D with PARAQUAT CONCENTRATE.

Order of Tank Mixing

It is advisable to tank mix PARAQUAT CONCENTRATE and other listed products as follows:

1. Fill spray tank 1/2 full with clean water or other approved carriers such as clear liquid fertilizer.
2. Begin tank agitation and continue throughout mixing and spraying.
3. Add dry formulations (WP, DF, etc.) to tank.
4. Add liquid formulations (SC, EC, L, etc.) to tank.
5. Add PARAQUAT CONCENTRATE to tank.
6. Add nonionic surfactant to tank.
7. Fill remainder of spray tank.

Always read other pesticide products labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions.

It is advisable to perform a jar test to check physical compatibility when using different formulation of the herbicides listed on this label.

GENERAL PRECAUTIONS AND RESTRICTIONS

EQUIPMENT

PARAQUAT CONCENTRATE is **corrosive to aluminum**. Thoroughly flush all aluminum spray equipment and aluminum aircraft structures that are exposed to spray solution or spray drift with water immediately after use.

The activity of PARAQUAT CONCENTRATE may be reduced in dry areas where dust stirred up by high winds or equipment tires can coat weed or plant leaves. Therefore, avoid applications in extremely dusty conditions.

LIMITATIONS AND PRECAUTIONS

- **Unless otherwise indicated, PARAQUAT CONCENTRATE will severely injure or kill crop plants emerged at time of application if they come in contact with sprays.**
- Do not pasture livestock in treated fields or feed treated foliage in cotton when this product is used as a cotton harvest aid.
- Do not use around home gardens, schools, recreational parks, or playgrounds.
- Do not apply to soils lacking clay minerals such as peat, muck, pure sand, artificial planting media for preplant and preemergence (to the crop) uses.
- To enable maximum weed and grass emergence prior to treatment, seedbeds and plantbeds should be formed as far ahead of planting and treatment as possible.
- Avoid disturbing soil when seeding or transplanting.
- Transplanted plants may become damaged when they come in contact with plastic mulch used for preplant weed control and that has been treated with this product. To prevent damage to the crop, sufficient wash-off such as rainfall or sprinkler irrigation prior to planting may be needed.
- PARAQUAT CONCENTRATE will be ineffective in controlling or suppressing weeds and grasses that have emerged after application.

APPLICATION INSTRUCTIONS

Crop	Weeds	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
ALFALFA (California only) New seedlings		Broadcast	0.7-1.3 pts. See Table 2.	Ground: 10 gals. Air: 5 gals.	70	<ul style="list-style-type: none"> • Do not make more than one application per year. • Applications should be made during late winter or early spring. • Do not cut or harvest within 70 days after application. • Alfalfa foliage present at time of application will be burned. • Replanting may be needed due to the reduction of seedling stands. • Do not apply to seedling alfalfa grown for seed.
ALFALFA Preplant or Preemergence (No-till or conventional planting)		Broadcast or Banded Over Row	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Apply prior to emergence of the crop. Avoid disturbing soil when seeding. • Crop plants emerged at time of application will be killed.
ALFALFA Dormant season Established plantings Region A - See table at end of Alfalfa section	Weeds, including bluegrass, chickweed, henbit, downy brome, ryegrass, cheatgrass, dogfennel, tansymustard, London rocket, sowthistle, rescue brome, wild oats, and other winter annuals; and suppression of perennial weeds.	Broadcast	1.3-2.0 pts.	Ground: 10 gals. Air: 5 gals.	42	<ul style="list-style-type: none"> • Do not make more than one application per year. • Fall regrowth: Do not apply if last fall cutting is greater than 6." • Spring regrowth: Do not apply if last cutting is greater than 2". • After the crop is dormant, apply to well-established stands that are at least 1-year old. • Yield of first cutting may be reduced because alfalfa foliage present at the time of application will be burned. • Do not cut or harvest within 42 days after application. • For improved and longer-lasting weed control, tank mix with metribuzin (Lexone or Sencor). Always refer to the metribuzin label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.

Alfalfa section	On fall-seeded newly established stands less than 1-year-old: Region B - See table at end of Alfalfa section	California: Desiccation of weeds including bluegrass, ryegrass, shepherdspurse, chickweed, tansymustard, foxtail, sowthistle and groundsel.	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	60	<p>may be necessary. Green alfalfa foliage present at time of application will be burned.</p> <ul style="list-style-type: none"> • If there is a severe weed infestation, total hay yield of first cutting may be reduced in alfalfa fields and the reduction is typically directly proportionate to the loss of weed weight. • For improved and residual weed control in dormant established (at least 1-year-old) alfalfa, tank mix with metribuzin (Lexone or Sencor). Do not apply tank mix with metribuzin on alfalfa that is less than 1-year-old. • Always refer to metribuzin label for weeds controlled, rates of applications, directions for use, limitations, and restrictions. <p>California</p> <ul style="list-style-type: none"> • If ryegrass, shepherdspurse, sowthistle or groundsel are present, use high rate.
			Broadcast	0.5-0.8 pts.	Ground: 10 gals. Air: 5 gals.	60	

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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
ALFALFA (East of the Rocky Mountains) Between-cuttings treatment in established plantings. (Includes first year alfalfa)	Broadcast	0.7 pt.	Ground: 10 gals.	30	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Control of weeds beyond the seedling stage and weed stubble cut off during harvest are less affected by this treatment. • Make applications immediately after alfalfa has been removed for hay or silage. • Do not treat more than 5 days after cutting. • A reduction in first year alfalfa stands and yields may occur if alfalfa is allowed to regrow more than 2 inches. • Burning of alfalfa foliage will occur at time of application. • Weed control may be reduced where moisture is limited such as in arid climates. • Do not cut or harvest within 30 days of application. • Apply as needed up to three times during the growing season in addition to a dormant application. • Do not make more than 2 applications during the first growing season of first-year alfalfa.
ALFALFA (For use only in the following states: ID, MT, NV, OR, UT, WA, WY)	Broadcast	1.7-2.7 pts.	Ground: 20-25 gals. Air: 5-10 gals.	See Precautions	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Do not harvest until at least 4 days after application. • Do not apply when weather conditions favor drift from treated areas. • Do not apply by ground equipment within 25 ft., or by air within 75 ft. of lakes; reservoirs; rivers; permanent streams; marshes or natural ponds; estuaries; and commercial fish farm ponds. • Use only on fields in production of alfalfa seed. Do not use on fields producing alfalfa for livestock feed. Do not use any portion of the

Desiccation of alfalfa to aid harvesting alfalfa

seed					treated field for human or animal feed, including seed, seed screenings, hay forage, or stubble
PARAQUAT CONCENTRATE/ Reglone Tank Mix	Broadcast	1.3-2.7 pts. PARAQUAT CONCENTRATE/ 2 pts. Reglone	Ground: 20-25 gals. Air: 5-10 gals.	See Precautions	<ul style="list-style-type: none"> • Do not cut current year's treated alfalfa seed crop for hay or forage. Do not graze current year's treated alfalfa seed crops. • Do not use treated alfalfa seed for sprouting. Tag all alfalfa seed treated with PARAQUAT CONCENTRATE/Reglone tank mix at processing plants with, "NOT FOR HUMAN CONSUMPTION". The grower is responsible for notifying the processing plants of any seed crop treated with PARAQUAT CONCENTRATE/Reglone tank mix. • Remove ALL PARAQUAT CONCENTRATE/Reglone treated alfalfa seed screenings from the market because all screening from alfalfa seed processing are prohibited from feed channels.

ALFALFA: New Seedlings - Suppression and control of broadleaf weeds and grasses in new alfalfa seedlings grown for hay (California only).		
For Control of:	Rate/Acre*	
	For Suppression	For Control
Annual Bluegrass	—	10.7-21.3 fl. oz.
Chickweed	—	10.7-21.3 fl. oz.
Fiddleneck (6 inches tall or less)	5.4-10.7 fl. oz.	21.3 fl. oz.
Red Maids (6 inches tall or less)	—	10.7-21.3 fl. oz.
Shepherdspurse	10.7-21.3 fl. oz.	—
Spikeweed (4 inches tall or less)	5.4 fl. oz.	10.7-16.0 fl. oz.
Volunteer Small Grain (8 inches tall or less)	5.4-10.7 fl. oz.	21.3 fl. oz.

*** Use the 5.4 fl. oz. rate only when alfalfa has at least 3 trifoliate leaves; use the 10.7 fl. oz. rate only when alfalfa has 6 trifoliate leaves; or use rates over 10.7 fl. oz. only when there are 9 trifoliate leaves.**

Alfalfa – Regions

REGION A
Alaska, California (counties of Del Norte, Siskiyou, Medoc, Shasta, Lassen, Plumas, Sierra and Nevada), Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey,

New York, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming

REGION B

Alabama, Arizona, Arkansas, California (all other counties not listed in Region A), Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Texas

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
ALMONDS	Directed Spray	0.8-2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • Avoid allowing spray to contact green stems (except suckers) or foliage. • When spraying around young trees, use a shield or wrap plant. • Do not graze treated areas and do not feed cover crops grown in treated areas to livestock. • Do not apply when nuts to be harvested are on the ground. • Retreatment or spot treatments may be necessary for mature woody weeds, perennial weeds, late germinating weeds and green suckers.
ARTICHOKE (GLOBE)	Directed Spray	1.7-2.7 pts.	Ground: 20-100 gals.	1	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Do not exceed 8 pts. per season. • Applications must be made at least 7 days apart. • Do not harvest within 24 hours of last application.
ASPARAGUS	Preplant or Preemergence Broadcast or Banded Over- Row	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Application should be made prior to emergence of the crop. • Emerged asparagus at time of application will be killed.
ASPARAGUS Preemergence to	Broadcast or Banded Over-Row	1.7-2.7 pts.	Ground: 10 gals.	6	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Application should be made prior to emergence of the crop or after last harvest.

established plantings at least 2 years old.					• Emerged asparagus at time of application will be killed.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
BEANS, DRY Not for use in California Sweet lupin White sweet lupin White lupin Grain lupin Adzuki beans Asparagus beans Black beans Broad beans Field beans Garbanzo beans Kidney beans Lablab beans Moth beans Mung beans Navy beans Pinto beans Rice beans Tepary beans Urd beans Guar PEAS, DRY Not for use in California Blackeyed peas Chickpeas Cowpeas Crowder peas Southern peas Catjang	Harvest-Aid	0.8-1.3 pts.	Ground: 20 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Add nonionic spreader at 1 qt./100 gals. of spray mix. • Use a single application of the higher rate for vining type beans or bush type with lush growth. • May also be applied as a split application and may improve vine coverage. However do not make more than 2 applications per year or exceed a total of 1.3 pints per acre. • Apply when at least 80% of the pods are yellowing and mostly ripe and when leaves are no more than 40% of bush type peas or beans or 30% of vine type peas or beans are green. • Do not apply when weather conditions favor spray drift. To reduce drift, a drift control agent may be included. • Not registered for use in dry beans and dry peas in California.
BERRIES Blackberry Blueberry Currant Elderberry Gooseberry	Postemergence Directed Spray	1.3-2.7 pts.	Ground: 50 gals.	—	<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • New canes or shoots can be injured. Therefore, apply before their emergence. • To prevent crop injury from spray mist, apply as a coarse spray.

Huckleberry Loganberry Raspberry					
CACAO	Directed Spray	1.3-2.7 pts.	Ground: 50-200 gals.	1	<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • Apply when weeds are succulent and growth is from 1-6". • Retreatment or spot treatments may be necessary for mature woody weeds, late-germinating weeds and grasses and for perennials. • Use a shield for young trees to prevent sprays from contacting cacao plants, as injury may result. • Do not spray under windy conditions. • Do not graze treated areas or feed treated cover crops to livestock.
CASSAVAS, TANIERS & YAMS (Puerto Rico only)	Shielded Post Directed Spray	1.3 pts.	Ground: 50 gals.	90	<ul style="list-style-type: none"> • Cassavas and Taniers: Do not make more than 3 applications per year. • Yams: Do not make more than 2 applications per year. • Make applications when weeds are succulent and growth is 1-6". • Prevent spray from contacting crop to prevent injury to crop. • Do not spray under windy conditions. • Do not graze treated areas or feed treated forage to livestock.

General Information for Chemical Fallow

- As the density of stubble, crop residue or weeds increases, use higher spray volumes for better coverage.
- To control volunteer wheat or downy brome, fall-applied treatments generally work best with PARAQUAT CONCENTRATE. If possible, tank mix with atrazine for maximum burndown and residual control.
- Apply from immediately after harvest up to emergence of the newly seeded crop as a broadcast or band treatment.
- Before applying PARAQUAT CONCENTRATE, cut wheat as high as possible to avoid cutting weeds too short, and allow the weeds to grow at least 2-3" after harvest.
- The addition of dicamba (Banvel) or 2,4-D ester (Low Volatile) may aid in the suppression of emerged perennial broadleaf weeds and large annual broadleaf weeds. Always refer to the product label(s) for 2,4-D ester (Low Volatile), Banvel, or residual herbicide for rates of applications, directions for use, limitations, and restrictions.
- It is permissible to tank mix with registered residual herbicide combinations other than listed for extended weed control during the fallow period
 - Weeds and grasses emerging after application and weeds taller than 6 inches will not be controlled.
 - Crop plants emerged at the time of application will be killed.
 - The minimum total spray per acre allowed is 5 gallons for ground and 5 gallons for air applications.
 - Apply 5-60 gallons spray mix per acre by ground application.
 - When applying at less than 10 GPA by ground:
 - Do not apply with floaters or exceed a speed of 10 mph.
 - Apply with flat fan nozzles at 30-40 psi.
 - Apply only in a tank mix with atrazine at a minimum of 0.5 lb. a.i./acre.
 - By air: apply in 5-10 gallons of spray mix per acre.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CHEMICAL FALLOW Continuous Wheat (2-3 month recropping interval)	Broadcast	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7- 2.0 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply at least 45 days before seeding. • For volunteer wheat or downy brome control in spring, use at least 1.3 pts. of PARAQUAT CONCENTRATE per acre with a Photosynthetic Inhibitor Herbicide. • Refer to the section "General Information for Chemical Fallow".
CHEMICAL FALLOW Wheat-Fallow- Wheat Rotations (Fall applied after harvest; seeded 12-14 months later)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Spray before weeds produce seeds. • Control of volunteer wheat and downy brome control increases when applications are made late August or early September. • For improved burndown and residual control of weeds, tank mix with Atrazine, Marksman Herbicide, or Command Herbicide. • For improved burndown and residual control of grass and broadleaf weed tank mix with metribuzin (Sencor 75DF). • Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions. • Refer to the section "General Information for Chemical Fallow".
CHEMICAL FALLOW Wheat-Fallow- Wheat Rotations (Spring applied; seeded 3-5 months later)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • To conserve moisture, application should be made March 1 to April 15, prior to spring rains. • Even though moisture loss is greater when applications are made after the boot stage, volunteer wheat is easier to control after this stage. • For volunteer wheat or downy brome control in spring, use at least 1.3 pts. of PARAQUAT CONCENTRATE per acre with a Photosynthetic Inhibitor Herbicide. • Refer to the section "General Information for Chemical Fallow". • For burn down and residual control of grass and broadleaf weeds, tank mix with metribuzin, (Sencor 75DF/Lexone). • Always refer to the label for metribuzin (Sencor 75DF/Lexone) for rates of applications, directions for use, limitations, and restrictions.
CHEMICAL FALLOW Wheat-Annual Crop-Wheat Rotations (Fall applied in wheat stubble)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For improved burndown and residual weed control, tank mix with Atrazine or Marksman. Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions. • Make applications after wheat harvest and before weeds produce seed. • If grasses such as foxtails or barnyardgrass recover, respray before seed production. • Applications made late August to November help control volunteer wheat and downy brome. • Refer to the section "General Information for Chemical Fallow".
CHEMICAL FALLOW Wheat-Annual Crop-Wheat Rotations (Spring applied prior to planting an annual crop.)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For enhanced burndown and residual weed control, tank mix with Atrazine. Always refer to the respective product label(s) for Atrazine for rates of applications, directions for use, limitations, and restrictions. • For volunteer wheat or downy brome control in spring, use at least 1.3 pts. of PARAQUAT CONCENTRATE per acre with a Photosynthetic Inhibitor Herbicide. • Refer to the section "General Information for Chemical Fallow". • Refer to the Atrazine label for recommendations pertaining to soil pH and recropping intervals.

Approved Annual Crops are grain sorghum, corn, wheat, or proso millet.

Crop	Weeds	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CLOVER AND OTHER LEGUMES including velvetbean, lespedeza, lupine, sainfoin, trefoil, vetch, crown vetch, and milk vetch. Dormant Season On established plantings: Region A - See table at end of Alfalfa section. On established plantings: Region B - See table at end of Alfalfa section. On fall-seeded, newly established stands less than 1-year-old: Region A - See table at end of Alfalfa section.	For desiccation of weeds, including London rocket, sowthistle, rescue brome, wild oats, chickweed, ryegrass, bluegrass, cheatgrass, dogfennel, tansymustard, henbit, downy brome, and other winter annuals, and suppression of perennial weeds.	Broadcast	1.3-2.1 pts.	Ground: 10 gals. Air: 5 gals.	60	<ul style="list-style-type: none"> Do not make more than 1 application per year. Applications should be made during late fall or winter months after the last cutting and before first spring cutting. Do not apply if regrowth after grazing or cutting is more than 2". Do not harvest within 60 days of application. CAUTION: Stand and/or yield reductions may occur when applications are made to clover or other legumes that are not dormant, or have broken dormancy. Therefore, it may be necessary to replant. Burning will occur to green clover or other legumes' foliage present at the time of application. Discoloration and temporary stunting will occur in clover or other legumes foliage present at the time of application. If there is severe weed infestation, the total hay yield of first cutting may be reduced in clover or other legumes fields and is usually directly proportionate to the loss of weed weight. In California: <ul style="list-style-type: none"> If ryegrass, shepherdspurse, sowthistle or groundsel are present, use high rate.
	California - Use for desiccation of weeds including bluegrass, ryegrass, shepherdspurse, chickweed, tansy mustard, foxtail, sowthistle and groundsel.	Broadcast	0.7-1.3pts.	Ground: 10 gals. Air: 5 gals.	60	
		Broadcast	0.7-1.3pts.	Ground: 10 gals. Air: 5 gals.	60	

On fall-seeded, newly established stands less than 1-year-old: Region B - See table at end of Alfalfa section.	Broadcast	0.5-0.8 pts.	Ground: 10 gals. Air: 5 gals.	60
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CORN FIELD CORN POPCORN SWEET CORN SEED CORN (Used alone)	Preplant or Preemergence Broadcast or Banded Over Row	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> Do not make more than 3 applications per year. Includes field, fresh sweet, forage, fodder and popcorn. To permit maximum weed and grass emergence, seedbeds should be formed as far ahead of planting and treatment as possible. Seeding should be done with a minimum amount of soil disturbance. Control will not occur when applications are made after weeds and grasses have emerged. However, crop plants emerged at time of application will be killed.
CORN Tank mixes for no-till/ reduced till	Preplant or Preemergence Broadcast or Banded Over Row	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.*	—	<ul style="list-style-type: none"> Do not make more than 3 applications per year. Applications should be made as broadcast sprays before, during or after planting, but before crop emergence. PARAQUAT CONCENTRATE may be tank mixed with the following herbicides for improved burndown or residual control: 2,4-D Ester (Low Volatile) Harness® Harness® Xtra AAtrex®/Atrazine Lasso® Herbicide Banvel® Linex® Bicep MAGNUM® Lorox® Bicep Lite II MAGNUM® Princep® Dual MAGNUM Prowl® Herbicide Frontier® Simazine® Guardman® Surpass® EC Harmony® Extra Herbicide Surpass® 100 (Preplant only) Topnotch® PARAQUAT CONCENTRATE may also be tank mixed with Ambush® Insecticide. Always refer to respective product label(s) for rates of applications, directions for use, limitations, and

					<p>restrictions.</p> <p>* Always refer to respective product label(s) to confirm if these products can be applied by air.</p>
FIELD CORN, POPCORN, SWEET CORN, SEED CORN	Postemergence Directed Spray (including Hooded or Shielded)	0.7-1.3 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Applications should be made when weeds are actively growing. • Use a higher rate on larger or hard to control weeds. Weeds 6" or taller may not be controlled. • Severe damage and/or complete kill can occur if spray contacts corn plants <p>For Hooded Or Shielded Sprayers:</p> <ul style="list-style-type: none"> • Use a hooded or shielded sprayer with skids or wheels on the spray boom to maintain spray height in order to prevent excessive crop phytotoxicity. • Apply by directing spray between the rows and using hooded or shielded sprayers to prevent spray contact with crop plants. <p>For Directed Spray Without Hooded Or Shielded Sprayers:</p> <p>Corn height is measure from soil surface to top of whorl.</p> <ul style="list-style-type: none"> • Apply when corn is at least 10" tall with nozzles arranged to spray no higher than the lower 3" of corn stalks. • Corn plants shorter than 10" may be injured and not recover. • For corn more than 20" tall: Arrange the nozzles to spray no higher than the lower 1/3 of the corn stalks. • Injury to corn foliage will occur if sprayed. However, corn will recover and develop normally.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
FIELD CORN, POPCORN, SEED CORN	Harvest Aid Broadcast	0.8-1.3 pts.	Ground: 20 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than one application per year. Make ONE (1) application at least 7 days prior to harvest. • Apply after the corn is mature. This is indicated by a black layer which forms at the base of the kernels. You may consult your local agricultural authority for help in identifying the black layer. • Add nonionic surfactant containing at least 75% surface active ingredient at 0.25% v/v. • To desiccate mature broadleaf weeds and grasses or broadleaf weeds and grasses that are taller than 18", use 1.3 pts. • Drought stressed plants, especially broadleaf weeds, can be difficult to kill, and desiccation may not be complete.

FIELD CORN ONLY (grain, fodder, forage)	Postemergence Directed Spray USDA Witchweed Eradication Program	1.3 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • If regrowth occurs, initiate sprays in late June to early July and repeat in early August. • Follow application instructions in post-emergence directed spray section above.
FIELD CORN ONLY (grain, fodder, forage) 2,4-D Amine AE Tank Mix	Postemergence Directed Spray USDA Witchweed Eradication Program	5.4 fl. oz. +0.5 lb. 2,4-D Amine AE	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply as directed spray onto grassy weeds and witchweed before witchweed blooms. If regrowth occurs, reapply. • Follow application instructions in post-emergence directed spray section above. • Always refer to respective product label(s) for rates of applications, directions for use, limitations, and restrictions.
COTTON (Used alone)	Preplant or Preemergence	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply prior to, during or after planting, but before crop emergence. • For fallow bed treatment, beds should be preformed to permit maximum weed and grass emergence prior to treatment. • Seeding should be done with a minimum of soil disturbance.
COTTON (California only; Used alone)	Preplant	5.4-10.7 fl. oz.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For control of volunteer barley in preformed seedbeds.
COTTON Goal Herbicide Tank Mix	Preplant or Fallow Bed Broadcast	1.7-2.7 pts.	Ground: or Air: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Always refer to the Goal label for weeds controlled, rates of applications, and directions for use, limitations, and restrictions.
COTTON Other Tank Mixes	Preplant or Preemergence	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply as a broadcast spray before, during or after planting, but before crop emergence. • For improved residual control or burndown, PARAQUAT CONCENTRATE may be tank mixed with the following herbicides: <ul style="list-style-type: none"> o Caparol® Herbicide o Cotoran® Herbicide o Cotton-Pro® Herbicide o Diurone® o Dual MAGNUM® o Harmony Extra (Preplant Only) o Meturon® Herbicide o MSMA o Prowl® o Zoriate® Herbicide

				<ul style="list-style-type: none"> • When tank mixing with Cotoran DF[®] or Meturon DF[®], follow mixing instructions carefully, maintain constant agitation, and see Order of Tank Mixing section in respective labels. • When tank mixing with any of the herbicides listed above, always refer to respective product label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
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COTTON Harvest Aid Use Restrictions

- Do not make more than 4 applications per year.
- Do not pasture livestock in treated fields or feed treated foliage.
- Do not apply to cotton within 3 days before harvest.
- Repeat application if necessary. Do not exceed a total of 1.3 pts./A as a harvest aid.

May be tank mixed with other cotton harvest aid materials known to be effective by a local expert. Unless otherwise instructed in this label, always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions.

• PARAQUAT CONCENTRATE can be applied in a tank mix with methyl parathion and/or Karate[®] insecticide. Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions.

Nodes above cracked bolls (NACB) timing is for guidance and is not intended to restrict the local expert in their use of the product.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
SOUTHERN COTTON Harvest aid for boll opening and defoliation (Tank mix with phosphate and chlorate defoliants).	Broadcast	5.4 fl. oz. + 1 pt. phosphate or 1 gal. chlorate	Ground: 10 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • Development of immature bolls will be inhibited. • Apply when 80% or more of the bolls are open and the remaining bolls to be harvested are mature. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.
SOUTHERN COTTON Additional tank mixes for boll opening and defoliation	Broadcast	2.1-3.3 fl. oz.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • PARAQUAT CONCENTRATE may be tank mixed with the following products to aid in defoliation and opening of mature bolls. Accelerate[®] Defoliant Def[®] Defoliant Dropp[®] Defoliant Ethephon Plant Growth Regulator Folex[®] Defoliant Harvade[®] Harvest Growth Regulator Prep[™] PGR • Apply when 60% or more of the bolls are open and the remaining bolls to be harvested are mature.

					<ul style="list-style-type: none"> • Development of immature bolls will be inhibited. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.
SOUTHERN COTTON Post Defoliation - To aid in opening of mature bolls and to desiccate green weeds.	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	3	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • If weed infestation is heavy or dense, use higher rate. • Apply when 75% or more of bolls are open and remaining bolls to be harvested are mature. • Development of immature bolls will be inhibited. • After a defoliation or conditioning application has been made, delay desiccation application of PARAQUAT CONCENTRATE approximately 3-7 days to minimize leaf sticking.
WESTERN COTTON Harvest aid for boll opening and early defoliation	Broadcast	3.7-5.4 fl. oz. + phosphate or sodium chlorate; and/ or other compatible harvest aid products.	Ground: 10 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • On rank cotton, use higher rate. • Do not use more than 5.4 fl. oz of PARAQUAT CONCENTRATE for early defoliation as excessive desiccation may occur. • Early defoliation timing is when 60% or more of the bolls are open and the remaining bolls to be harvested are mature (approximately 4 NACB). • Development of immature bolls will be inhibited. • Do not use more than 4.0 lbs. of actual sodium chlorate defoliant per acre at this early defoliation timing. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
WESTERN COTTON Harvest aid for boll opening and mid-to-late defoliation	Broadcast	5.4-10.7 fl. oz. alone or tank mix with sodium chlorate or phosphate defoliation and/ or other compatible harvest aid products.		3 (Alone)	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • Use the 10.7 fl. oz. rate of PARAQUAT CONCENTRATE in desert cotton areas or on rank vigorous cotton. • Mid-to-late defoliation timing is when 75% or more of the bolls are open and remaining bolls to be harvested are mature (approximately 3 or fewer NACB). • Development of immature bolls will be inhibited. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.
COTTON Stripper or Spindle Harvested	Broadcast	2.1-7.5 fl. oz.	Ground: 10 gals. Air:	3	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • BECAUSE OF EXTREMES IN ENVIRONMENTAL AND PLANT CONDITIONS, IT IS ADVISABLE TO APPLY THE RANGE OF RATES ON A SMALL BLOCK OF COTTON TO DETERMINE THE

Harvest aid for defoliation and boll opening.			5 gals.		<p>RATE THAT BEST FITS YOUR NEEDS. • Apply when 75% of the bolls are open and the remaining bolls to be harvested are mature.</p> <p>• DEVELOPMENT OF IMMATURE BOLLS WILL BE INHIBITED, SLICE BOLLS AND INSPECT THE SEED FOR MATURITY.</p> <p>• PARAQUAT CONCENTRATE may be applied alone or tank mixed with the following cotton harvest aids:</p> <p>Accelerate Defoliant®</p> <p>Def Defoliant®</p> <p>Dropp Defoliant® Ethephone Plant Growth Regulator Folex Defoliant®</p> <p>Harvade® Harvest Growth Regulator Prep™ PGR</p> <p>• May be applied as a split application. Do not exceed a total of 1.3 pts./A.</p> <p>• To avoid leaf sticking, apply PARAQUAT CONCENTRATE as a desiccant approximately 3-7 days after defoliant or a conditioning application and 7-14 days before harvest.</p> <p>• Cooler temperatures may cause a longer waiting period between application of PARAQUAT CONCENTRATE as a desiccant and defoliation/ conditioner.</p> <p>• South of Interstate-10 in Texas, where temperatures are typically higher during defoliation, lower rates in the range may be necessary.</p> <p>• Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.</p>
COTTON Late season desiccation	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	3	<p>• Do not make more than 4 applications per year.</p> <p>• BECAUSE OF EXTREMES IN ENVIRONMENTAL AND PLANT CONDITIONS, IT IS ADVISABLE TO APPLY THE RANGE OF RATES ON A SMALL BLOCK TO DETERMINE THE RATE THAT BEST FITS YOUR NEEDS.</p> <p>• May be applied as a split application. Do not exceed a total of 1.3 pts./A.</p> <p>• Apply when 85% of the bolls are open and the remaining bolls to be harvested are mature (approximately 0 NACB).</p> <p>• Development of immature bolls will be inhibited. Slice bolls and inspect the seed for maturity.</p> <p>• South of Interstate-10 in Texas, where temperatures are typically higher during defoliation, lower rates in the range may be necessary.</p> <p>• Delay desiccation application of PARAQUAT CONCENTRATE approximately 3-7 days to minimize leaf sticking if a defoliation or conditioning application has been made.</p> <p>• May be tank mixed with other harvest aid materials known to the local expert to be effective.</p>
COTTON Desiccation of regrowth	Broadcast	0.75-1.25 pts.	Ground: 10 gals. Air: 5 gals.	3	<p>• Do not make more than 4 applications per year.</p> <p>• Use to desiccate regrowth occurring after defoliation or desiccation.</p> <p>• Because regrowth is difficult to control, <i>distel</i> thorough coverage with the full recommended rate is necessary. • Control is dependent on growing conditions and desiccation of small new regrowth may not always be complete.</p> <p>• If regrowth is excessive, use higher rate.</p>

EASTER LILIES (Field grown)	Preemergence	1.7-2.7 pts.	Ground: 10 gals.	—	• Do not exceed two applications per year.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
FALLOW LAND Prior to planting of any crops.	Preplant Broadcast to Fallow Land	1.0-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year, during the fallow period. • Fallow land may be between operations such as disking, ripping, plowing, leveling, irrigating or listing for ground preparation purposes. • Use for the control of weeds such as bluegrass, chickweed, henbit, downy brome, ryegrass, cheatgrass, dog fennel, tansy mustard, London rocket, sowthistle, rescue brome, wild oats, volunteer cereals and other winter annuals and for suppression of perennial weeds or sedges. • For weeds approaching the maximum size of 6", the higher rate may be used. • No more than 2 applications should be made during the fallow period. • Prior to application allow maximum weed emergence to maximize the benefit of this use. • Adhere to the preharvest intervals and other crop specific restrictions for planted crops elsewhere on this label.
GRASSES (For seed) (For use in seedbed preparation)	Preplant, at Planting, or Preemergence	1.3-2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Prepare the seedbeds and allow weeds to germinate. • Apply PARAQUAT CONCENTRATE when weeds are at the 3-5 leaf stage. • Applications may be repeated as necessary (but only up to 3 applications per year) prior to grass emergence. • Do not graze treated areas or use the seed or straw from treated areas for animal feed or bedding.
GUAR (Preharvest desiccation)	Preharvest	1.3 pts.	Ground: 10 gals.	4	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply after the pods are fully mature. • Do not graze treated areas or use the treated forage for animal feed.
GUAVA	Directed Spray	2.5 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • Do not allow spray to contact green stems, fruit or foliage. • Do not graze treated areas. • Do not feed cover crops grown in treated areas to livestock. • Retreatment or spot spraying may be necessary for mature woody weeds, late-germinating weeds and grasses, and perennials.
HOPS (ID, OR, & WA only)	Directed Spray and/or Suckering and	1.3 pts.	Ground: 10 gals.	14	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Retreatment of spot treatment may be necessary.

	Stripping.				<ul style="list-style-type: none"> • Do not allow spray to contact green stems, foliage, flowers, or cones as injury may result. • Do not allow animals to graze in treated hopyards. • Silage and hop vine refuse may be fed to livestock. • Spray only the basal 2 ft. of the vines for sucking and stripping. Repeat as necessary, but only up to 3 applications per season. • Experience with varieties other than Cascade, Yakima Cluster, and Bullion is limited. If using PARAQUAT CONCENTRATE on other varieties than these, test the use pattern on a small number of vines of each variety to determine sensitivity to injury. Do not use on unlisted varieties if unacceptable crop injury occurs. • Chemical Pruning: Spray when vines are less than 3 ft. tall to burn back existing vines and obtain even emergence of subsequent vines. • APPLICATION TO HOP VINES LESS THAN 6 FT. TALL MAY CAUSE UNACCEPTABLE INJURY.
LENTILS NOT REGISTERED FOR USE ON LENTILS IN CALIFORNIA.	Harvest Aid	0.8-1.3 pts.	Ground: 20 gals. Air: 7 gals.	7	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Add nonionic surfactant at 0.25% v/v (2 pts./100 gals.) of the finished spray volume. • May also be applied as a split application. DO NOT make more than 2 applications or exceed a total of 1.3 pts./A. The split application may improve coverage. • Apply when crop is mature and at least 80% of the pods are yellowing and mostly ripe with no more than 30% of the leaves still green in color. • DO NOT apply when weather conditions favor spray drift. To reduce spray drift a drift control agent may be included.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
MINT (Peppermint, Spearmint)	Dormant Season	1.3-2.0 pts.	Ground: 10 gals. Air 5 gals.		<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • For suppression of weeds such as groundsel, chickweed, downy brome, bluegrass, Italian ryegrass, prickly lettuce. • Apply when crop is dormant before spring growth begins and when weeds are less than 6" tall. • Do not apply more than 2.0 pts./A per dormant season. • May be tank mixed with Sinbar® Herbicide (terbacil) weed killer for improved contact activity and residual control of Italian ryegrass, prickly lettuce and groundsel. Apply this tank mixture no more than once per season. Always refer to Sinbar (terbacil) label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
ONIONS (seeded) AND GARLIC	Preplant/ Preemergence	1.7-2.7 pts.	Ground: 10 gals.	60/200 (CA only)	<ul style="list-style-type: none"> • Do not make more than 1 application per year. • For heavy weed infestations or wild oat control use the higher rate. Apply only one application per season at the 2.7 pts./A dosage.

					<ul style="list-style-type: none"> • Allow maximum weed and grass emergence prior to treatment but apply prior to crop emergence. • Apply a maximum of 2.7 pts./A per season.
PASSION FRUIT	Directed Spray	2.5 pts.	Ground: 10 gals.		<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • If bark is still green at application time, use a shield or wrap vine. • Pick all fruit off the ground prior to application if application is to be made during harvest season. • Do not allow animals to graze on treated areas. • It may be necessary to retreat or spot treat.
PEANUTS	Broadcast At Ground Crack Postemergence	5.4-10.8 fl. oz.	Ground: 10 gals.		<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • To control or suppress small (1-6") emerged annual grass and broadleaf weeds in peanuts at ground crack. A second application may be made up to 28 days after ground crack. • For at ground crack use, PARAQUAT CONCENTRATE can be tank mixed with Pursuit Herbicide or Dual MAGNUM for residual weed control. • Always refer to the Pursuit or Dual Magnum label for a list of weeds controlled, application rates, necessary precautions, and use limitations. • Make no more than 2 applications per season and do not apply a total of more than 10.8 fl. oz. of product per acre per season. • Crop foliage sprayed will be injured in the form of bronzing and crinkling, but the crop will recover and develop normally. • Do not apply by air.
PEANUTS Basagran® Herbicide Tank Mix	Broadcast At Ground Crack Postemergence	5.4-10.8 fl. oz.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Tank mix PARAQUAT CONCENTRATE with Basagran at 1 pt./A. for improved control of weeds such as cocklebur, bristly starbur, smartweed and prickly sida. • This tank mix can be applied at the ground crack stage of peanuts. A second application may be made up to 28 days after ground crack. • Make no more than 2 applications per season and do not apply a total of more than 10.8 fl. oz. of product per acre per season. • Crop foliage sprayed will be injured in the form of bronzing and crinkling, but the crop will recover and develop normally. • Always refer to the Basagran label for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • If injury (leaf phytotoxicity and/or plant stunting) produced by any other herbicide treatment, do not apply this tank mix as injury may be enhanced and/or prolonged.

					<ul style="list-style-type: none"> • During prolonged periods of drought or unseasonably cold weather do not apply this tank mix as unsatisfactory weed control may result. • Do not apply by air.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
PEANUTS Butyrac® Herbicide or Butoxone® 200 Herbicide Tank Mix	Broadcast Postemergence	5.4-10.8 fl. oz.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • For improved control of weeds such as cocklebur, sicklepod and morningglory, tank mix PARAQUAT CONCENTRATE with 8-16 oz. (0.125-0.25 lbs.) per acre of Butyrac or Butoxone 200. • Do not apply a total of more than 10.8 fl. oz. of product per season and make no more than 2 applications per season • Crop foliage sprayed will be injured in the form of bronzing and crinkling but the crop will recover and develop normally. • Always refer to the Butyrac or Butoxone 200 labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not apply by air.
PIGEON PEAS (Puerto Rico only)	Directed Spray	1.3 pts.	Ground: 10 gals.	60	<ul style="list-style-type: none"> • Do not make more than 1 application per year. • Avoid contact with pigeon pea foliage. • Do not make more than 1 application per season. • Do not graze treated areas or feed treated forage to livestock. • Cannery waste can be fed to livestock.
PINEAPPLE	Directed Spray	1.3-2.7 pts.	Ground: 10 gals.	20	<ul style="list-style-type: none"> • Do not exceed 3 applications per season. • More mature weeds may require retreatment.
POTATO	Preplant or Preemergence Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply up to ground cracking stage, before potatoes have emerged.
POTATO (California, Washington, Oregon, Idaho only; used alone)	Preplant Broadcast	0.4-0.7 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For control of volunteer barley in preformed seedbeds.
POTATO Fresh Market Only	Broadcast	0.7-1.3 pts.	Ground: 20 gals.	3	For Fresh Market Potatoes Only. (Fresh Market Potatoes include potatoes that are sent directly from the field to a consumer, grocery store,

<p>Preharvest vine killing and weed desiccation.</p> <p>For Use Only in the states of: Colorado, Delaware, Idaho, Illinois, Indiana, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, Nevada, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Utah, Washington, Wisconsin and Wyoming</p>				<p>or processor for use.)</p> <ul style="list-style-type: none"> • DO NOT make more than 2 applications per year. • DO NOT use on potatoes that will be stored as tuber decomposition may result. • Potatoes must be harvested promptly after desiccation and processed or consumed immediately. • DO NOT apply to drought stressed potato vines. • DO NOT use to desiccate the vines of seed potatoes as seed pieces may fail to germinate and grow normally. • DO NOT pasture livestock in treated potato fields. • DO NOT exceed 2.6 pts./A per season. • Begin application when leaves begin to turn yellow. • Immature potato foliage is tolerant to PARAQUAT CONCENTRATE. However, desiccation will not be complete under this condition. • Use 1.3 pts./A rate where quick vine kill is desired. • For dense vine growth, use 2 applications of 0.6 pt/ A. Split applications must be applied a minimum of five days apart.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
RICE	Preplant or Preemergence Broadcast	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2.0 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply as a broadcast spray before, during or after planting, but before crop emergence. When vegetation is dense, use higher rates and spray volumes. • Seeding should be done with a minimum amount of soil disturbance. • This product will not control weeds and grasses emerging after application. Crop plants emerged at time of application will be killed. • PARAQUAT CONCENTRATE may be tank mixed with other herbicides registered for this use for improved or extended weed control. Always refer to the tank mix product label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not flood/flush within 48 hours of application in order to ensure complete kill of vegetation. If cool, cloudy and/or wet weather delays speed of kill, do not flood/flush until complete kill is evident.
SAFFLOWER	Preplant or Preemergence Broadcast or Banded Over Row	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply before, during and after planting but before crop emergence.
SAFFLOWER (California only)	Preplant Broadcast	0.7 pt.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For control of volunteer barley in preformed seedbeds.

			Air: 5 gals.		
SMALL GRAINS (Barley, wheat)	Preplant or Preemergence	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	• Do not make more than 3 applications per year.
SMALL GRAINS (Wheat Only) Hoelon® 3EC Tank Mix	Preplant or Preemergence	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	• Do not make more than 3 applications per year. • A tank mix with Hoelon 3EC will improve grass control. • Apply when weeds are actively growing and 1-6" in height. Weeds 6 inches or taller may not be controlled. • Do not apply this tank mix to barley as crop injury may result. • Always refer to the Hoelon 3EC label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
SORGHUM (Grain)	Preplant/ Preemergence Broadcast or Band	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	48 (grain) 20 (forage)	• Do not make more than 3 applications per year. • To allow maximum weed and grass emergence, seedbeds should be formed as far ahead of planting as possible • Seeding should be done with a minimum amount of soil disturbance.
SORGHUM (Grain) Atrazine & 2,4-D ester [Low Volatile] Tank Mix	Preplant or Preemergence	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.		48 (grain) 20 (forage)	• Do not make more than 3 applications per year. • PARAQUAT CONCENTRATE may be tank mixed with Atrazine for improved preemergence or residual weed control. The addition of 2,4-D ester (Low Volatile) may assist in the suppression of perennial and annual broadleaf weeds emerged at the time of application. Always refer to the specific product label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
SORGHUM (Grain) Harmony® Extra Herbicide Tank Mix	Preplant	1.3-2.5 pts.	Ground: 10 gals.	48 (grain) 20 (forage)	• Do not make more than 3 applications per year. • For Improved weed control, PARAQUAT CONCENTRATE may be tank mixed with Harmony Extra. • Always refer to the Harmony Extra label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.

Crop	PARAQUAT CONCENTRATE		Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
	Use Pattern	Rate Per Acre			
SORGHUM (Grain)	Postemergence Directed (Including Hooded or Shielded)	0.7-1.3 pts.	Ground: 10 gals.	48 (grain) 20 (forage)	• Do not make more than 2 applications per year. • Apply when weeds are actively growing. • Use higher rate on larger or hard to control weeds. Weeds 6" or taller may not be controlled. • Severe damage and/or complete kill can occur if spray contacts sorghum plants. • Do not exceed 2 postemergence-directed applications or exceed a total of 5.3 pts. PARAQUAT CONCENTRATE per season. HOODED OR SHIELDED SPRAYERS • To avoid excessive crop phytotoxicity, use a hooded or shielded sprayer with skids or wheels on the spray boom to maintain spray height.

					<ul style="list-style-type: none">• Apply by directing spray between the rows and by using hooded or shielded sprayers to prevent spray contact with crop plants. <p>DIRECTED SPRAY WITHOUT HOODED OR SHIELDED SPRAYERS</p> <ul style="list-style-type: none">• Apply when sorghum is at least 12" tall when naturally standing.• Do not exceed 30 psi nozzle pressure or spray under conditions which may cause excessive drift.• Use precision directed-spray application equipment adjusted so that no more than the lower 3" of the sorghum stalk is contacted by the application spray.• Some crop injury will occur. The degree of injury is related to the precision of application and spraying conditions.																		
SOYBEANS	Preplant or Preemergence	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none">• Do not make more than 3 applications per year.• Do not exceed a total of 4.0 pts. of PARAQUAT CONCENTRATE per season.• Apply as a broadcast spray before, during or after planting, but before crop emergence. • PARAQUAT CONCENTRATE may be tank mixed with the following herbicides for improved burndown or residual control: <table><tr><td>2,4-DB</td><td>Lorox</td></tr><tr><td>Canopy Dual</td><td>Lorox Plus Prowl</td></tr><tr><td>MAGNUM</td><td></td></tr><tr><td>Goal</td><td>Pursuit Herbicide</td></tr><tr><td>Harmony Extra</td><td>Scepter Herbicide</td></tr><tr><td>{Preplant Only}</td><td>Sencor Herbicide</td></tr><tr><td>Lasso</td><td>Surflan® Herbicide</td></tr><tr><td>Lexone</td><td>Turbo Herbicide</td></tr><tr><td>Linex</td><td></td></tr></table> <ul style="list-style-type: none">• The rate of this product to be used in these tank mixtures is dependent on weed height and growing conditions. Where weed canopy is dense or under dry conditions, use the highest recommended rate of PARAQUAT CONCENTRATE. Always refer to the respective product label(s) for a list of weeds controlled, rates of applications, directions for use, limitations, and restrictions.• The lower application rate may be used when weeds are less than 4" tall and a selective postemergence spray or cultivation will be made within 3 weeks after planting.• Seeding should be done with a minimum amount of soil disturbance.• Do not graze or harvest for forage or hay before the R3 stage of soybean development (early pod).	2,4-DB	Lorox	Canopy Dual	Lorox Plus Prowl	MAGNUM		Goal	Pursuit Herbicide	Harmony Extra	Scepter Herbicide	{Preplant Only}	Sencor Herbicide	Lasso	Surflan® Herbicide	Lexone	Turbo Herbicide	Linex	
2,4-DB	Lorox																						
Canopy Dual	Lorox Plus Prowl																						
MAGNUM																							
Goal	Pursuit Herbicide																						
Harmony Extra	Scepter Herbicide																						
{Preplant Only}	Sencor Herbicide																						
Lasso	Surflan® Herbicide																						
Lexone	Turbo Herbicide																						
Linex																							
SOYBEANS 2,4-D ester (Low Volatile) Tank Mix	Preplant or Preemergence	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none">• Do not make more than 3 applications per year.• Apply 2,4-D ester (Low Volatile) at 0.475-0.95 lbs. a.i./A at least 7 days prior to planting. • Apply 2,4-D ester (Low Volatile) at 0.475-0.95 lbs. a.i./A at least 30 days prior to planting. • Do not apply 2,4-D ester (Low Volatile) prior to planting soybeans if you are not able to accept the results of soybean injury																		

		Weeds 6": 2-2.7 pts.			including possible loss of stand and yield. • Do not use amine formulation as PARAQUAT CONCENTRATE activity may be reduced. • May be tank mixed with residual herbicides listed above. • Always refer to the 2,4-D ester (Low Volatile) label for weeds controlled, rates of application, directions for use, limitations, and restrictions.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
SOYBEANS	Postemergence Directed Spray (Includes Hooded or Shielded)	3.0-5.3 fl. oz.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply when weeds are actively growing. • Use the lower rate of PARAQUAT CONCENTRATE for control of seedling johnsongrass, crabgrass, goosegrass, Brachiaria, Texas millet and pigweed less than 2" tall. • For control of 2-4" red rice, Brachiaria, barnyard grass, crabgrass, goosegrass, seedling johnsongrass, giant foxtail, and fall panicum, use 5.3 fl. oz. of PARAQUAT CONCENTRATE. • Use 5.3 fl. oz. of PARAQUAT CONCENTRATE for control of 2-3" sicklepod, purslane, pigweed, cutleaf ground cherry, and common ragweed. • Apply PARAQUAT CONCENTRATE at 5.3 fl. oz./A plus 0.2 lb. active ingredient per acre of a 2,4-D formulation for control of 2-4" grasses in mixture with common cocklebur, morningglory, and red rice. • Always refer to the 2,4-D label for weeds controlled, rates of applications, directions for use, limitations, and restrictions • Do not graze or harvest for forage or hay. • If necessary, make a second and final application 7-14 days later. <p>HOODED OR SHIELDED SPRAYERS</p> <ul style="list-style-type: none"> • Apply by directing spray between the rows and using hooded or shielded sprayers to prevent spray contact with crop plants. • Use higher rate on larger (less than 6") or hard to control weeds. Weeds 6" or taller may not be controlled. • Severe damage and/or complete kill can occur if spray intentionally or accidentally (including drift of fine droplets) contacts the plants. <p>DIRECTED SPRAY WITHOUT HOODED OR SHIELDED SPRAYERS</p> <ul style="list-style-type: none"> • Do not treat on soybeans that are less than 8" tall. • Use precision directed spray application equipment adjusted so that no more than the lower 3" of the soybean plant is contacted by the application spray. • Do not exceed 30 psi nozzle pressure or spray under conditions which may cause excessive drift. • Some crop injury will occur. The degree of injury is dependent upon the precision of

					application and spraying conditions.
SOYBEANS	Harvest Aid	5.4-10.7 fl. oz.	Ground: 20 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Indeterminant varieties: Applications should be made when at least 65% of the seed pods have reached a mature brown color or when seed moisture is 30% or less. Determinant varieties: Apply when plants are mature, i.e., beans are fully developed, 1/2 of leaves have dropped, and remaining leaves are yellowing. • Injury will occur on immature soybeans. • Mature cocklebur, especially drought-stressed plants, are tolerant to PARAQUAT CONCENTRATE and desiccation will not be complete. Always use the higher rate when treating cocklebur. • Do not apply within 15 days of harvest. • Do not graze or harvest for forage or hay.
STRAWBERRIES	Postemergence Directed Spray	1.3 pts.	Ground: 20 gals.	21	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Direct spray between the rows, using shields to prevent spray contact with crop plants. • Do not allow spray to contact strawberry plants as injury or excessive residues may result. • Do not apply more than 3 times per season. • Do not graze livestock in treated areas.
SUGAR BEETS	Preplant or Preemergence	1.3-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For heavier weed infestations, use the higher label rate. • Seeding or transplanting should be done with a minimum amount of soil disturbance. • Crop plants emerged at time of application will be killed. • Can be used in fallow bed/stale seedbed for weed control. • Seedbeds or plantbeds should be formed as far ahead of treatment as possible to permit maximum weed emergence.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
SUGARCANE	Postemergence Directed Spray (includes Hooded or Shielded)			—	General Comments <ul style="list-style-type: none"> • Do not make more than 2 applications per year, except applications made by air in Florida and Texas in which the maximum number of applications allowed is 1 per year. • Apply as a hooded, shielded or directed spray to avoid contact with cane foliage to prevent leaf burn and yield reduction. • If necessary, a second and final application can be made when new weed growth is 2-6" high. • Do not graze treated areas or feed treated forage to livestock.
—Florida—		1.3 pts.	Ground: 50 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Optimum results can be obtained by applying in early spring (March-April) when weeds are small.

					<ul style="list-style-type: none"> • Do not apply after June 1 as cane growth may be stunted and yields reduced.
—Hawaii—		1.3 pts.	Ground: 20 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Do not apply after cane rows have closed in.
—Louisiana—		0.7-2.0 pts.	Ground: 20 gals.	30	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • For tiller control, apply when tillers are less than 18" high. • For heavier weed infestations or tiller growth use the higher rate.
—Florida & Texas—	Harvest Aid	0.4-0.7 pts.	Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 1 application per year. • Under cool, cloudy weather conditions use higher rate. • Apply 3-14 days before burning and harvest.
SUNFLOWER	Preplant or Preemergence Broadcast or Banded Over Row	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply before, during, or after planting but before crop emergence.
SUNFLOWER	Preharvest Desiccation Broadcast	0.8-1.3 pts.	Ground: 10 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Apply when sunflower seeds reach physiological maturity (when seed moisture is 35% or lower). For many varieties, this is equivalent to the time when the back of the heads are yellow and the bracts are turning brown. • Do not graze treated areas or feed treated forage to livestock. • When crop stands or weed infestations are heavy, use the higher label rate.
TARO, DRYLAND (Hawaii Only)	Postemergence Directed Spray	1.3-2.1 pts.	Ground: 10 gals.	180	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Do not allow spray to contact the taro plants as injury may result. • Make the first application when weed growth is 1-4" high. • Weeds emerging after the application will not be controlled. • A single re-treatment may be made; however, do not harvest dryland taro within 6 months of the last application.
TREE PLANTATION ESTABLISHMENT Deciduous and Conifers	Preplant Broadcast	1.3-2.7 pts.	Ground: 20 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • To allow maximum emergence of weeds prepare ground early. • Apply prior to planting. Plant with minimal soil disturbance. • For heavier weed infestations, use the higher application rate. • For improved burndown or residual control, tank mix PARAQUAT CONCENTRATE with other herbicides labeled for this use. • Always refer to the specific tank mix herbicide label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not apply in less than 20 gals./A as weed control will be reduced.

Crop	Use Pattern	PARAQUAT CONCENTRATE	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
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*Separate
w/line
or comma*

		Rate Per Acre			
TREES AND VINES	Directed Spray	1.7- 2.7 pts.	Ground: 10 gals.		
Orchards, Vineyards, Windbreak, Shade & Ornamental Trees:				Apricots 28	<ul style="list-style-type: none"> • Do not make more than 5 applications per year, except for: Apricots, Cherries, Kiwi Fruit, Nectarines, Peaches, Plums, no more than 3 applications per year; Olives, no more than 4 applications and Pistachios, no more than 5 applications but only 2 applications after shells split. • Do not allow spray to make contact with green stems (except suckers), fruit or foliage. • Use the shield or wrap plant when spraying around young trees or vines. • Do not graze treated areas. • Do not feed covered crops grown in treated areas to livestock. • Do not apply when figs, nuts or olives to be harvested are on the ground. • For apricots - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season. • For cherries - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season. • For figs - Do not harvest within 13 days after application and do not exceed 5 postemergence directed applications per season. • For grapes - Treat when sucker growth is no more than 8" long. Late season applications to weeds should be made to avoid contact with desirable foliage. • For kiwi fruit - Do not treat more than 3 times per year. • For mature woody weeds, perennial weeds, late germinating weeds and green suckers, retreatment or spot treatment may be necessary. • For nectarines - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season. • For olives - Do not harvest within 13 days after application and do not exceed 4 postemergence directed applications per season. • For peaches - Do not harvest within 14 days after application, and do not exceed 3 postemergence directed applications per season. • For pistachios - Do not exceed 2 applications after shells split. • For plums - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season.
Acerola				Cherries 28	
Apples				Figs 13	
Apricots				Kiwi Fruit 14	
Avocados				Nectarines 28	
Bananas				Olives 13	
Beechnut Brazil nut Butternut				Peaches 14	
Calamondin				Pistachios 7	
Cashew				Plums 28	
Cherries					
Chestnut					
Chinquapin					
Citrus citron					
Coffee					
Figs					
Filberts					
Grapefruit					
Grapes					
Hickory nut					
Kiwi fruit / Kumquat Lemon Lime					
Macadamia nuts					
Mandarin					
Nectarines					
Olives					
Orange (sour & sweet) / Papayas					
Peaches					
Pears					
Pistachios					
Plums					
Prunes					
Pummelo					
Satsuma mandarin					
Walnuts					
Other shade and ornamental trees such as arborvitae, ash, elm, fir, oak, pine, etc.					

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
TREES AND VINES Tank Mixes	Directed Spray	1.7-2.7 pts.	Ground: 10 gals.	Always refer to other Tank Mix labels	<ul style="list-style-type: none"> • Do not make more than 5 applications per year, except for: Apricots, Cherries, Kiwi Fruit, Nectarines, Peaches, Plums, no more than 3 applications per year; Olives, no more than 4 applications and Pistachios, no more than 5 applications but only 2 applications after shells split. • This product may be tank mixed with registered residual herbicides listed below for combined emerged and residual weed control. PARAQUAT CONCENTRATE may be tank mixed with the following herbicides: Devrinol® Herbicide Goal® Karmex® Krovar® Herbicides Princep® Sinbar® Solicam® Herbicide Surflan® • Always refer to other herbicide labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
TYFON (New Hampshire only)	Preplant Preemergence	1.7-2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Seeding should be done with a minimum of soil disturbance. • Weeds and grasses emerging after treatment will not be controlled. • Crop plants emerged at time of application will be injured.
VEGETABLES (Seeded or Transplanted) Beans (Lima, Snap) Broccoli Cabbage Cantaloupe Carrots Cauliflower Chayote fruit Chinese cabbage Chinese waxgourd Citron melon Collards	Preplant Preemergence	1.3-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Seedbeds or plantbeds should be formed as far ahead of treatment as possible to permit maximum weed emergence. • Banded or broadcast treatment applications can be made before, during or after planting but prior to the crop emergence. • For heavier weed infestations, use the higher rate. • Seeding or transplanting should be done with a minimum amount of soil disturbance. • Crop plants emerged at time of application will be killed. • PARAQUAT CONCENTRATE can be used in fallow bed/stale seedbed

Cucumber Eggplant Gherkin Gourd, Edible Groundcherry Lettuce Momordica spp. Musk melons Peas Pepino Peppers Pumpkin Squash Sweet Corn Tomatillo Turnips Tomatoes Watermelons					for weed control alone or tank mixed with Goal. Always refer to the Goal label for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not harvest tomatoes within 30 days after application.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
VEGETABLES Eggplant Tomatoes Peppers	Directed Spray	1.3 pts.	Ground: 10 gals.	—	• Do not make more than 3 applications per year. • For control or suppression of emerged weeds between rows after crop establishment. • Use precision directed spray application equipment adjusted to prevent spray contact with crop plants. Do not exceed 30 psi nozzle pressure. Do not spray under conditions which may cause excessive drift. • Apply when weeds are succulent and weed growth is less than 6". • Do not apply more than 3 applications per season. • Do not allow animals to graze in treated areas. • Do not harvest tomatoes within 30 days after application.
VEGETABLES Tomatoes	After Final Harvest	1.6-2.5 pts.	Ground: 40-120 gals.	—	• Do not make more than 2 applications per year. • Apply in 40-120 gallons of water per acre (0.62-0.93 lb. a.i./A). • Add NIS containing 75% or more surface active agent at 0.125 v/v (1 pt./100 gals. spray solution). • To ensure maximum herbicide burndown, tomato vines should be thoroughly covered. • PARAQUAT CONCENTRATE may be deactivated and less efficacious when dirty or muddy water is used. • To aid in the removal of sweet potato

					whitefly, burn tomato vines with propane burners as soon as possible after the vines have dried down sufficiently. • DO NOT apply more than a total of 3 lbs. active ingredient (paraquat) per acre per season. • To minimize drift, do not use nozzles or nozzle configurations which produce fine spray droplets (mist). • Do not make more than 2 applications per year. • For control of volunteer barley in preformed seedbeds. • Do not harvest tomatoes within 30 days after application.
VEGETABLES (California, Washington, Oregon, Idaho only) Lettuce Melon Sugar Beets Tomatoes	Broadcast	0.4-0.7 pts.	Ground: 10 gals. Air: 5 gals.	—	
VEGETABLES Rhubarb	Dormant	1.7-2.7 pts.	Ground: 10 gals.	—	• Do not exceed 2 applications per year. • Apply during dormant season before buds in crown begin to grow.

RESIN SOAKING

Pines including Loblolly, Shortleaf, Longleaf, Slash, Virginia, Pond, Pitch, and Spruce Pines.

Tree Selection - Trees should be selected from stands on sites not subject to stress from periods of extreme drought stress because the desiccating effect of PARAQUAT CONCENTRATE is accentuated during drought, causing a reduction in the amount of oleoresin deposited in the xylem. Vigorous, non-stagnated natural or planted stands should be selected. Plan PARAQUAT CONCENTRATE treatments in stagnated or commercial timber stands, not sooner than three years after a commercial thinning.

Application Directions To bring the treatment into contact with sapwood (or xylem), apply water-diluted PARAQUAT CONCENTRATE to an appropriate wound in the tree trunk.

Bark Streaks or Cuts: Use a standard or rotary bark hack or a chainsaw shipping tool (used in naval stores work) to remove a single 1-inch wide streak of bark about 1-2 ft. from ground level. Do not exceed 1/3 of the circumference of the tree. Serious girdling of the trunk and premature death of the tree can result if multiple streaks or cuts are made. Apply a coarse spray (about 1.7-5.0 ml) PARAQUAT CONCENTRATE solution (1-5% cation, wt./wt. basis) to runoff to the exposed xylem, using a low-pressure sprayer. The amount of spray required per cut depends on tree circumference and the length of cut or streak. For example, for a 9-inch diameter tree, using 3 ml of 2 or 4% PARAQUAT CONCENTRATE solution will cover the 1-inch wide streak and will result in application of 60 or 120 mg per streak.

Time of Treatment: Less severe pine beetle infestation and longer tree life usually result during cool season treatments under non-drought seasons. However, resin soaking can occur from treatments made any time of the year.

Interval between Treatment and Tree Harvest: There should be at least a 6-month interval between application of PARAQUAT CONCENTRATE and tree harvest. However it is preferable the interval is from 12-24 months, even though intervals of over 6 months may not be possible under conditions of drought or serious pine beetle attacks possibly making early harvest necessary.

With this treatment, there is a potential for promoting beetle attack or causing premature death of the tree. At high dosage rates, desiccation of the xylem tissue, rather than the desired resin

soaking, may occur.

Note: This type of treatment may reduce stem growth during between treatment and tree harvest.

Dilution Table for PARAQUAT CONCENTRATE (3.0 lbs. cation per gallon)	
Concentration of Cation Desired (wt./wt. basis)	Add the Following No. Gal. of Water to 2/3 Gallon of PARAQUAT CONCENTRATE
0.2%	118.8
0.5%	46.8
1.0%	22.9
2.0%	10.9
3.0%	6.9
4.0%	4.9
5.0%	3.7

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CONSERVATION RESERVE, FEDERAL SET-ASIDE, CONSERVATION COMPLIANCE PROGRAMS (For use in compliance with the Federal Conservation Reserve Program or Federal set-aside programs)	Broadcast	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • PARAQUAT CONCENTRATE may be tank mixed with other herbicides registered for this use for improved emerged weed control or extended weed control. Always refer to tank mix herbicide labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
NONCROP USES	Broadcast or Spot Treatment	1.7- 2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Repeat applications as necessary but do not make more than 10 applications per year. • To be used in noncrop areas including public airports, electric transformer stations, pipeline pumping stations, around commercial buildings, storage yards and other installations, and fence lines. • Avoid spray contact with the foliage of ornamentals or desired plants.

PASTURE RESEEDING For suppression of existing sod and undesirable emerged broadleaf weeds and grasses prior to or at time of planting grasses or forage legumes	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	See specific geographic recommendation	<ul style="list-style-type: none"> Do not make more than 3 applications per year. West of Cascade and Sierra Nevada Mountains <ul style="list-style-type: none"> Apply in October through December after first fall rains and after weeds have emerged and sod has started new growth. Apply on moderately to heavily grazed areas for best seeding results. Do not use in heavy sod and weed growth areas. East of Rocky Mountains <ul style="list-style-type: none"> Use the 1.3 pts rate on vigorous or coarse sod species such as brome grass. Apply prior to, or at time of seeding grasses or forage legumes. Apply only to grazed or mowed pastures not more than 3" in height at time of treatment. Bermudagrass or Bahiagrass Sods <ul style="list-style-type: none"> Apply in late summer or early fall to sod not exceeding 3" in height. For control of emerged little barley, apply in February or March before the mid-boot stage of little barley. Bermudagrass and Coastal Bermudagrass Pastures <ul style="list-style-type: none"> Apply when bermudagrass is dormant. For control of little barley, apply before the mid-boot stage. Do not mow for hay until 40 days after treatment.
For control of endophyte-fungus-infected fescue forage legume/grass mixture and other grass pastures	Broadcast (Split Application)	0.7-1.3 pts. followed by 0.7-1.3 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> Do not make more than 2 applications per year. Use split applications of 10-21 days apart if necessary. Do not exceed 2.6 pts./A total in preparation for reseeding. For spring plantings, the initial application of 0.7-1.3 pts. may be made the previous fall. Apply when fescue is actively growing and no more than 4" high. To reduce the infestation of endophyte-infested grass, do not allow fescue to go to seed starting with the preceding year's crop.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
*For prickly pear desiccation in pastures *Not for use in California	Spot Sprays	0.8 fl. oz. per gallon of water	Spray to wet weed foliage	—	<ul style="list-style-type: none"> Do not make more than 10 applications per year. Hand-held equipment such as knapsacks backpack sprayers, pump-up pressure sprayers, hand-guns, and hand-wands, can be used to direct the spray onto weed foliage so that the spray

					<p>thoroughly wets foliage.</p> <ul style="list-style-type: none"> • Mix 0.8 fl. oz. of PARAQUAT CONCENTRATE and 1/3 fl. oz. of a nonionic surfactant per gallon of water. • Completely and uniformly cover all green prickly pear foliage with spray. • Apply in May through September for best desiccation results. • Do not use more than 1.6 pts. of PARAQUAT CONCENTRATE per acre per year. • Apply only to pastures with no more than 3" of height at time of treatment. • Tank mix with Grazon® P+D Specialty herbicide at a rate of 1-2 fl. oz. per gallon of water for improved desiccation and perennial control of prickly pear. • Always refer to the Grazon P+D Specialty herbicide label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
*For Juniper Species leaf moisture reduction or desiccation prior to Prescribed burning of pastures *Not for use in California	Broadcast	1.3 pts.	Air; 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 10 applications per year. • Use only in conjunction with prescribed burning as recommended and monitored by local SCS or University and Extension Range Specialists. • Apply during hot, dry weather conditions (generally July and August). • Use 2% v/v nonionic surfactant in a minimum of 5 gal spray solution. • Monitor juniper leaf moisture content. Maximum leaf moisture reduction generally occurs 3-4 weeks after PARAQUAT CONCENTRATE application. • Significant soil moisture and/or wet weather conditions prior to or after application will decrease the potential for juniper crown burns. • Reduction in leaf moisture can be adversely affected by cool or humid weather conditions. • Do not graze livestock after application or prior to burning.
*Native Pastures *Not for use in California	Broadcast	1.0-1.25 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Apply PARAQUAT CONCENTRATE for control of downy and Japanese brome. • Apply in spring after 90% node formation of brome species, but before full bloom. • Emerged native perennial grasses will be burned by application, but application after 90% node formation will allow adequate time for native grasses to recover and attain maximum growth in the use season. • Do not apply more than 1.25 pts. PARAQUAT CONCENTRATE per year. • Apply only to pastures with no more than 3" of height at time of treatment.

Conversion Table PARAQUAT CONCENTRATE to Be Applied			
Ounces	Pints	Lb. a.i.	Acres/Gallon
2.5	0.16	0.06	51.3
4.8	0.30	0.11	26.7
5.28	0.33	0.12	24.2
5.52	0.35	0.13	23.2
10.00	0.63	0.23	12.8
11.00	0.69	0.26	11.6
11.20	0.70	0.26	11.4
12.00	0.75	0.28	10.7
16.00	1.00	0.38	8.0
20.00	1.25	0.47	6.4
20.80	1.30	0.49	6.2
24.00	1.50	0.56	5.3
28.00	1.75	0.66	4.6
32.00	2.00	0.75	4.0
40.00	2.50	0.94	3.2
43.20	2.70	1.00	3.0

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

Pesticide Storage: Store in original container and place in a locked storage area. Do not mix or store in containers, spray tanks, nurse tanks, or such systems made of aluminum or having aluminum fittings. Store at temperatures above 32°F. For Emergencies involving a Spill, Leak, Fire, Exposure, or Accident, contact: CHEMTREC at (800) 424-9300.

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal:

Do not reuse container as container is not safe for food, feed or drinking water!

Plastic containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Minibulk containers: Return empty containers for reconditioning.

WARRANTY STATEMENT IMPORTANT NOTICE - Seller warrants that this product conforms to the chemical description and is reasonably fit for purposes stated on the label when used in accordance with the directions and instructions under normal conditions of use; **but neither this warranty nor any other warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to seller, and buyer assumes the risk of any such use.**

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CHEMICAL CHEMICAL NAME
061402 1,2,3-Benzothiadiazole-7-carbothioic acid, S-methyl ester

COMPANY# 000100 SYNGENTA CROP PROTECTION, INC.
* DATA TYPES * ATTN: REGULATORY AFFAIRS
EU AT EC FW EF OT PO BOX 18300
XX GREENSBORO, NC 27419

COMPANY# 066607 SPRAY DRIFT TASK FORCE
* DATA TYPES * 1900 K STREET, NW
EU AT EC FW EF OT WASHINGTON, DC 20006
XX

COMPANY# 071755 AGRICULTURAL REENTRY TASK FORCE
* DATA TYPES * 1350 I STREET, N.W.
EU AT EC FW EF OT WASHINGTON, DC 20005
XX

COMPANY# 073989 FIFRA ENDANGERED SPECIES TASK FORCE, L.L.C.
* DATA TYPES * 1350 I STREET, NW
EU AT EC FW EF OT WASHINGTON, DC 20005
XX

CHEMICAL CHEMICAL NAME
061501 Paradichlorobenzene

COMPANY# 000334 HYSAN/AMP
* DATA TYPES * 9055 FREEWAY DRIVE
EU AT EC FW EF OT MACEDONIA, OH 44056
XX

COMPANY# 002155 I. SCHNEID
* DATA TYPES * PO BOX 16247
EU AT EC FW EF OT ATLANTA, GA 30321
XX

COMPANY# 010772 CHURCH & DWIGHT CO INC
* DATA TYPES * 469 NORTH HARRISON ST
EU AT EC FW EF OT PRINCETON, NJ 08543
XX

COMPANY# 066607 SPRAY DRIFT TASK FORCE
* DATA TYPES * 1900 K STREET, NW
EU AT EC FW EF OT WASHINGTON, DC 20006
XX

COMPANY# 074888 RESIDENTIAL EXPOSURE JOINT VENTURE (REJV)
* DATA TYPES * 900 17TH STREET, NW, SUITE 300
EU AT EC FW EF OT WASHINGTON, DC 20006
XX

COMPANY# 081433 IMS TRADING, LLC
* DATA TYPES * 12906 TELEGRAPH ROAD
EU AT EC FW EF OT SANTA FE SPRINGS, CA 90670
XX

COMPANY# 083424 TECHNOLOGY SCIENCES GROUP, INC.
* DATA TYPES * Agent for: OXFORD & HILL HOME PRODUCTS,
EU AT EC FW EF OT 1150 18TH ST, N.W., SUITE 1000
XX WASHINGTON, DC 20036

CHEMICAL CHEMICAL NAME
061601 Paraquat dichloride

COMPANY# 000100 SYNGENTA CROP PROTECTION, INC.
* DATA TYPES * ATTN: REGULATORY AFFAIRS
EU AT EC FW EF OT PO BOX 18300
XX XX XX GREENSBORO, NC 27419

COMPANY# 000239	THE ORTHO BUSINESS GROUP	
* DATA TYPES *	D/B/A THE SCOTTS COMPANY	✓
EU AT EC FW EF OT	PO BOX 190	
XX XX XX XX XX	MARYSVILLE, OH 43040	
COMPANY# 000524	MONSANTO CO	
* DATA TYPES *	Agent for: MONSANTO COMPANY	✓
EU AT EC FW EF OT	1300 I STREET, NW, SUITE 450 EAST	
XX XX	WASHINGTON, DC 20005	
COMPANY# 001471	DOW ELANCO	
* DATA TYPES *	9002 PURDUE RD	✓
EU AT EC FW EF OT	INDIANAPOLIS, IN 462681189	
XX		
COMPANY# 010182	SYNGENTA CROP PROTECTION	✓
* DATA TYPES *	410 SWING ROAD	
EU AT EC FW EF OT	GREENSBORO, NC 27409	
XX XX		
COMPANY# 024630	CRYSTAL CHEMICAL COMPANY	✓
* DATA TYPES *	1525 N POST OAK ROAD	
EU AT EC FW EF OT	HOUSTON, TX 77055	
XX		
COMPANY# 066222	MAKHTESHIM-AGAN OF NORTH AMERICA INC	○
* DATA TYPES *	4515 FALLS OF NEUSE RD, SUITE 300	
EU AT EC FW EF OT	RALEIGH, NC 27609	
XX		
COMPANY# 066607	SPRAY DRIFT TASK FORCE	✓
* DATA TYPES *	1900 K STREET, NW	
EU AT EC FW EF OT	WASHINGTON, DC 20006	
XX		
COMPANY# 068292	EDM INDUSTRIES INC.	✓
* DATA TYPES *	PO BOX 8552	
EU AT EC FW EF OT	PORTERVILLE, CA 93258	
XX XX		
COMPANY# 070552	KELLER AND HECKMAN LLP	✓
* DATA TYPES *	Agent for: SINON CORP	
EU AT EC FW EF OT	1001 G ST., NW, SUITE 500	
XX XX	WASHINGTON, DC 20001	
COMPANY# 071754	OUTDOOR RESIDENTIAL EXPOSURE TASK FORCE, L.L.C.	✓
* DATA TYPES *	1350 I STREET, N.W.	
EU AT EC FW EF OT	WASHINGTON, DC 20005	
XX		
COMPANY# 071755	AGRICULTURAL REENTRY TASK FORCE	✓
* DATA TYPES *	1350 I STREET, N.W.	
EU AT EC FW EF OT	WASHINGTON, DC 20005	
XX		
COMPANY# 073989	FIFRA ENDANGERED SPECIES TASK FORCE, L.L.C.	○
* DATA TYPES *	1350 I STREET, NW	
EU AT EC FW EF OT	WASHINGTON, DC 20005	
XX		
COMPANY# 074888	RESIDENTIAL EXPOSURE JOINT VENTURE (REJV)	✓
* DATA TYPES *	900 17TH STREET, NW, SUITE 300	
EU AT EC FW EF OT	WASHINGTON, DC 20006	
XX		
COMPANY# 075234	AGRICULTURAL HANDLERS EXPOSURE TASK FORCE	✓
* DATA TYPES *	PO BOX 509	
EU AT EC FW EF OT	MACON, MO 63552	
XX		

COMPANY# 081876
* DATA TYPES *
EU AT EC FW EF OT
XX

GRIFFIN CORPORATION
PO BOX 5126
VALDOSTA, GA 316035126

COMPANY# 082542
* DATA TYPES *
EU AT EC FW EF OT
XX XX

SOURCE DYNAMICS, LLC
10039 E. TROON NORTH DRIVE
SCOTTSDALE, AZ 85262

COMPANY# 082557
* DATA TYPES *
EU AT EC FW EF OT
XX

KELLER AND HECKMAN ~~LLP~~
Agent for: SINON USA INC.
1001 G ST., NW, SUITE 500
WASHINGTON, DC 20001

COMPANY# 083558
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EU AT EC FW EF OT
XX XX

MANA, INC
Agent for: CELSIUS PROPERTY, BV (NEUHASE)
4515 FALLS OF NEUSE ROAD, SUITE 30
RALEIGH, NC 27609

CHEMICAL

CHEMICAL NAME

061602 1,1'-Dimethyl-4,4'-bipyridinium bis(methyl sulfate)

COMPANY# 000239
* DATA TYPES *
EU AT EC FW EF OT
XX XX

THE ORTHO BUSINESS GROUP
D/B/A THE SCOTTS COMPANY
PO BOX 190
MARYSVILLE, OH 43040

COMPANY# 000524
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EU AT EC FW EF OT
XX XX

MONSANTO CO
Agent for: MONSANTO COMPANY
1300 I STREET, NW, SUITE 450 EAST
WASHINGTON, DC 20005

CHEMICAL

CHEMICAL NAME

061603 Paraquat

COMPANY# 073989
* DATA TYPES *
EU AT EC FW EF OT
XX

FIFRA ENDANGERED SPECIES TASK FORCE, L.L.C.
1350 I STREET, NW
WASHINGTON, DC 20005

CHEMICAL

CHEMICAL NAME

062150 Benzene, 1-methoxy-4-(2-propenyl)-

COMPANY# 070127
* DATA TYPES *
EU AT EC FW EF OT
XX

NOVOZYMES BIOLOGICALS, INC.
5400 CORPORATE CIRCLE
SALEM, VA 24153

CHEMICAL

CHEMICAL NAME

062201 2-Benzyl-4-chlorophenol

COMPANY# 000052
* DATA TYPES *
EU AT EC FW EF OT
XX XX

WEST CHEMICAL PRODUCTS, INC.
WEST PENETONE CORPORATION
700 GOTHAM PARKWAY
CARLSTADT, NJ 07072

COMPANY# 000211
* DATA TYPES *
EU AT EC FW EF OT
XX

CENTRAL SOLUTIONS, INC.
PO BOX 15276
KANSAS CITY, KS 66115

COMPANY# 000257
* DATA TYPES *
EU AT EC FW EF OT
XX

CELLO PROFESSIONAL PRODUCTS
1354 OLD POST ROAD
HAVRE DE GRACE, MD 21078

COMPANY# 000303
* DATA TYPES *
EU AT EC FW EF OT

HUNTINGTON PROFESSIONAL PRODUCTS
A SERVICE OF ECOLAB, INC.
370 N. WABASHA STREET



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

401 M Street, S.W.

WASHINGTON, D.C. 20460

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DATA MATRIX

Date 3/24/07 EPA Reg No./File Symbol 82542- Page 1 of 1

Applicant's Name & Address SOURCE DYNAMICS LLC Product

10031 E. TREPP NORTH DRIVE, SCOTTSDALE, AZ 85262 PARAQUAT CONCENTRATE

Ingredient

Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
			SYNGENTA Crop Protection		
			ORTHO/SCOTT'S		
			Monsanto Co.		
			Dow ELANCO		
			CRYSTAL CHEMICAL Co.		
			SDTF		
			EDM INDUSTRIES, INC.		
			HELLER & HEGEMAN/SINON		
			ORETF		
			ARTF		
			RETV		
			AHETF		
			LANDIS INT'L/GRIFFIN		

Signature

Name and Title

RUCUS BASTIAN, PRESIDENT

Date

3/24/07



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

1200 Pennsylvania Avenue, N.W.

WASHINGTON, D.C. 20460

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Certification with Respect to Citation of Data

Applicant's/Registrant's Name, Address, and Telephone Number **SOURCE DYNAMICS LLC**

EPA Registration Number/File Symbol

10039 E. TROON NORTH DRIVE, SCOTTSDALE, AZ 85262 (480) 502-7289**82542-**

Active Ingredient(s) and/or representative test compound(s)

Date

PARAQUAT**2/26/07**

General Use Pattern(s) (list all those claimed for this product using 40 CFR Part 158)

Product Name

TERRESTRIAL FOOD, TERRESTRIAL NONFOOD, NONCROP**PARAQUAT CONCENTRATE**

NOTE: If your product is a 100% repackaging of another purchased EPA-registered product labeled for all the same uses on your label, you do not need to submit this form. You must submit the Formulator's Exemption Statement (EPA Form 8570-27).

☐ I am responding to a Data-Call-In Notice, and have included with this form a list of companies sent offers of compensation (the Data Matrix form should be used for this purpose).

SECTION I: METHOD OF DATA SUPPORT (Check one method only)

☒ I am using the cite-all method of support, and have included with this form a list of companies sent offers of compensation (the Data Matrix form should be used for this purpose).

☐ I am using the selective method of support (or cite-all option under the selective method), and have included with this form a completed list of data requirements (the Data Matrix form must be used).

SECTION II: GENERAL OFFER TO PAY

[Required if using the cite-all method or when using the cite-all option under the selective method to satisfy one or more data requirements]

☒ I hereby offer and agree to pay compensation, to other persons, with regard to the approval of this application, to the extent required by FIFRA.

SECTION III: CERTIFICATION

I certify that this application for registration, this form for reregistration, or this Data-Call-In response is supported by all data submitted or cited in the application for registration, the form for reregistration, or the Data-Call-In response. In addition, if the cite-all option or cite-all option under the selective method is indicated in Section I, this application is supported by all data in the Agency's files that (1) concern the properties or effects of this product or an identical or substantially similar product, or one or more of the ingredients in this product; and (2) is a type of data that would be required to be submitted under the data requirements in effect on the date of approval of this application if the application sought the initial registration of a product of identical or similar composition and uses.

I certify that for each exclusive use study cited in support of this registration or reregistration, that I am the original data submitter or that I have obtained the written permission of the original data submitter to cite that study.

I certify that for each study cited in support of this registration or reregistration that is not an exclusive use study, either: (a) I am the original data submitter; (b) I have obtained the permission of the original data submitter to use the study in support of this application; (c) all periods of eligibility for compensation have expired for the study; (d) the study is in the public literature; or (e) I have notified in writing the company that submitted the study and have offered (i) to pay compensation to the extent required by sections 3(c)(1)(F) and/or 3(c)(2)(B) of FIFRA; and (ii) to commence negotiations to determine the amount and terms of compensation, if any, to be paid for the use of the study.

I certify that in all instances where an offer of compensation is required, copies of all offers to pay compensation and evidence of their delivery in accordance with sections 3(c)(1)(F) and/or 3(c)(2)(B) of FIFRA are available and will be submitted to the Agency upon request. Should I fail to produce such evidence to the Agency upon request, I understand that the Agency may initiate action to deny, cancel or suspend the registration of my product in conformity with FIFRA.

I certify that the statements I have made on this form and all attachments to it are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Signature

Date

2/26/07

Typed or Printed Name and Title

RUFUS BASTIAN, PRESIDENT

RE

DP BARCODE No.: D344384 **REG. No.:** 82542-G **PRODUCT NAME:** Paraquat Concentrate

DATE: 03 / OCT / 2007

SUBJECT: **PRODUCT CHEMISTRY REVIEW OF TGA/MP [] EP [X]**

DP BARCODE No.: D344384 **REG. No.:** 82542-G

PRODUCT NAME: Paraquat Concentrate

COMPANY: Source Dynamics, LLC

PCC: 061601; **Decision No.:** 377428; **ACTION CODE:** R31

FOOD USE [X]

INTEGRATED FORMULATION: Yes [X] No []

FROM: Shyam B. Mathur,
Product Chemistry Team Leader
Technical Review Branch/RD (7505P)

S. Brubaker
10703107
JMC

TO: Hope Johnson / James Tompkins, RM 25
Herbicide Branch / RD (7505P)

INTRODUCTION

The product chemistry data for the proposed end use product were reviewed previously (see Product chemistry report dated September 12, 2007; DP 339354). The active ingredient used in this formulation was produced by the integration process and was formulated into the proposed end use product by the addition of dyes & diluents. The product chemistry report indicated that all the product chemistry data cited & submitted were found to be acceptable, with the exception of one year storage stability (830.6317) and corrosion characteristics (830.6320). The report also concluded that the proposed end-use product (File Symbol No. 82542-G) was not substantially similar to the registered product with Reg. No. 82557-1, since the proposed product contained significant amounts of impurity of toxic concern which was not found in the registered product (for the name of the impurity refer to Confidential Appendix). The registrant responded on September 23, 2007, discussing the product chemistry issues pending with the proposed end use product. TRB has been asked evaluate the response provided by the registrant.

SUMMARY OF FINDINGS & CONCLUSIONS

1. The proposed end use product contains paraquat dichloride as the active ingredient with the nominal concentration & the product label claim of 43.20%. The active ingredient paraquat dichloride was produced by two step integrated process followed by the addition of the diluent and the dyes in desired proportions, without isolating the active ingredient.
 2. All the product chemistry data cited and submitted for the end use product and for the unregistered source were found to be acceptable, except for the guidelines 830.6317 (one year storage stability) and 830.6320 (corrosion characteristics) studies. The registrant has indicated that the long term studies for these two guidelines are in progress.
 3. Regarding the issue concerning "substantially similarity", the Agency maintains the previous decision taken that the proposed product is not substantially similar to the registered product. As has been pointed out in the previous report, the proposed product contains one impurity of toxic concern. In the response letter, the registrant has stated that the "impurity" in question is also being used as the solvent during the production of the active ingredient paraquat dichloride and also as diluent to formulate the end use product.
 4. Following regulations, the Agency considers that the impurity in question is of toxic concern at the levels present in the end-use formulation and consequently the proposed end-use product (File Symbol No. 82542-G) is not considered similar to registered product (Reg. No. 82557-1) from the product chemistry point of view. For the name of the impurity, please refer to Confidential Appendix.
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SENT VIA E-MAIL

September 23, 2007

Hope A. Johnson
U.S. Environmental Protection Agency
Office of Pesticide Programs
Registration Division
Herbicide Branch

Subject: Source Dynamics Paraquat Concentrate: 82542-G: Proposed Denial

Dear Ms. Johnson:

Thank you for your recent telephone calls and your letter of September 18, 2007 regarding the proposed decision to deny our registration application for Paraquat Concentrate. We believe that this involves misunderstandings that can be resolved administratively. We ask the Agency to consider the following issues:

1. Is Source Dynamics Paraquat Concentrate a technical material?

Source Dynamics Paraquat Concentrate is neither a technical material nor a manufacturing-use product. Our proposed label clearly shows that it is only an end-use product.

We note that in all the decades that Chevron, ICI Americas, Zeneca and Syngenta have had paraquat registrations, the technical material was never registered. It is not required for an end-use product to always be supported by the registration of a technical material. Today, only two "paraquat technical" products are registered (Sinon Corp. EPA Reg. No. 70552-1 and Celsius Property, BV, EPA Reg. No. 83558-5), and they are both in fact manufacturing-use products, aqueous solutions of paraquat dichloride. A true paraquat dichloride technical, which is a solid material, has never been registered in the United States.

2. What is "substantially similar"?

The OPP document "EPA Internal Guidance: Guidelines for Active Ingredient Reference Statements on Me-Too Product Labels," dated April 13, 2007, addresses the issue:

"For a product to be "substantially similar" to another product, its composition and labeling must be very similar to that of the other product. Substantially similar products are those that have the same active ingredient(s), but the percentages of each may vary as long as they fall within the range of composition of the referenced product and the hazards associated with the difference are not different from the referenced product. The substantially similar products must contain identical or substantially similar uses."

Source Dynamics LLC referenced the Sinon Corp. product Paraquat Technical Concentrate (EPA Reg. No. 70552-1), a manufacturing-use product containing 48.2% paraquat dichloride. We would have referenced the Sinon USA product Paraquat SL Herbicide (EPA Reg. No. 82557-1). This is currently sold by Chemtura as "Firestorm" (EPA Reg. No. 82557-1-400). This is an end-use product containing 3 lb of paraquat dication per gallon, or 43.8% paraquat dichloride. Our

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Scottsdale, AZ 85262

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Source Dynamics product is also an end-use product containing 3 lb of paraquat dichloride per gallon, and our label is identical to the "Firestorm" label.

We note that Group A product chemistry data were submitted for the Sinon USA product (MRID 46613800). However, no Group B product chemistry data are on file with the Agency. We can only conclude that the Agency determined that Sinon USA Paraquat SL Herbicide is "substantially similar" to Sinon Corp. Paraquat Technical. Source Dynamics LLC therefore concludes that it was appropriate to reference one Group B product property study submitted for Sinon Corp. Paraquat Technical Concentrate.

3. Oxidation/Reduction

Data on oxidation/reduction properties (OPPTS 830.6314) are required for an end-use formulation. The purpose of this simple test is to determine chemical incompatibility.

"These tests will indicate hazardous reactions which can occur resulting from contact of the chemical with common oxidizing and reducing agents, common fire extinguishing agents, and common solvents." [OPPTS 830.6314, page 1].

All formulations of paraquat dichloride are aqueous solutions. It is obviously the reactive paraquat ion that is of concern here, and it is known to be incompatible with aluminum, iron and mild steel.

The Agency has stated that if "the hazards associated with the difference are not different from the referenced product," then the me-too product is "substantially similar" to the referenced product. Source Dynamics LLC submits that the oxidation/reduction hazards of our 3 lb per gallon end-use product are substantially similar to the Sinon USA 3 lb per gallon end-use product Paraquat SL and the Sinon Corp. manufacturing-use product Paraquat Technical. We ask the Agency to use scientific judgment to also reach this conclusion.

4. Are studies of storage stability and corrosion characteristics required for the conditional registration of an end-use product?

In the past it has been the policy of the Agency to grant a conditional registration of an end-use formulation if studies of the storage stability and corrosion characteristics are not available. In practice these studies are rarely available at the time of a registration application because they require one year of data. Source Dynamics signed a protocol for these studies on September 15, 2006, although the test samples did not become available at the laboratory until October 27, 2006. Therefore these studies are not yet available. On our data matrix we noted that these studies were in progress. Source Dynamics requests that the Agency extend to us the same courtesies that are extended to all other registrants of end-use products.

5. What are the product chemistry registration requirements for an end-use product?

The 1996 Product Properties (830) Test Guidelines are, unfortunately, not particularly clear concerning whether a particular test should be conducted with a technical material, a manufacturing-use product, an end-use product or the pure active ingredient. These distinctions are displayed in 40 CFR 158.190, however, and they were summarized succinctly in the 1982 Pesticide Assessment Guidelines, Subdivision D, page 64. In particular, please consider the following product properties:

A. Vapor pressure (63-9; 830.7950): The pure active ingredient, not the technical material itself, and certainly not a manufacturing-use product, should be tested. Paraquat dichloride, the active ingredient, is a colorless, crystalline solid. It is neither appropriate nor useful to determine the vapor pressure of an aqueous solution of paraquat dichloride, because that is simply the vapor pressure of water.

The vapor pressure of pure paraquat dichloride has been determined (Ref. 1) to be below 1×10^{-7} torr, which is practical limit below which measurements are not possible. This is of course what one would expect of an ionic salt.

B. Solubility in water (63-8; 830.7840): This test should be conducted with a technical material or the pure active ingredient. It is not useful to specify the "solubility" of Paraquat Concentrate, which is already an aqueous solution, in water.

The solubility of paraquat dichloride in water has been determined (Ref. 2) to be 54.5% by weight, which is equivalent to 39.4% by weight of the paraquat dication. By comparison, the solubility of table salt in water is 35.7% by weight.

C. Octanol - water partition coefficient (63-11; 830.7550): This test should be performed only with the pure active ingredient and only for non-polar organic compounds, thus providing two reasons why it is not appropriate to conduct this test with Paraquat Concentrate. Paraquat dichloride salt is a highly polar, ionic salt.

The Agency has never before required that the octanol - water partition coefficient of paraquat dichloride be determined. Knowledge of an exact value would be of no value for regulatory decision-making. Nevertheless, the Kow can be predicted. Briggs (Ref. 3) experimentally derived a regression equation relating Kow and water solubility:

$$\log S = 0.84 - 1.18 \log Kow$$

where S = water solubility in moles per liter.

Given the known solubility of paraquat dichloride in water, the Kow is predicted to be 0.37.

Other evidence suggests that the Kow of paraquat dichloride is much lower than 0.37. A number of homologues of paraquat have been synthesized in which the 1-methyl and 1'-methyl groups were replaced with longer alkyl chains (Ref. 4). These homologues would be less polar than paraquat, although still very polar. The Kow for the 1-octyl, 1'-octyl homologue was measured to be 0.19, and that for the 1-hexyl, 1'-hexyl homologue was 0.017. The Kow for homologues having alkyl chains of C4 or shorter was too low to be measured. The conclusion is that virtually no paraquat dichloride will partition into the octanol phase.

D. Dissociation constant in water (63-10; 830.7370): This test should be performed only on the pure active ingredient. Paraquat dichloride is an ionic compound that is completely dissociated in water. The active ingredient is considered to be the paraquat dication.

E. UV/visible spectrum (830.7050): This test is appropriate only for the pure active ingredient. It is of no diagnostic value to determine spectra of a complex solution such as Paraquat Concentrate.

F. Melting point (63-5; 830.7200) and boiling point (63-6; 830.7220): Paraquat dichloride does not have a melting point. The solid compound decomposes above 300°C (Ref. 1).

In summary, we have concluded that it was not necessary for Source Dynamics LLC to include any of these parameters in the data matrix for our proposed end-use product. Nevertheless, we have provided information here. On the advice of the Technical Review Branch, we revised our data matrix to include citations of these Group B data requirements. Not having access to Sinon's report that we cited, we assumed that Sinon would have cited data on pure, solid paraquat dichloride. Judging from the Agency's response, this does not appear to be the case. We believe that it would be appropriate to retract our data matrix dated September 10, 2007 and return to the previous data matrix. These properties are not relevant to the Agency's decision

whether Simon's so-called "technical paraquat," which is actually a manufacturing-use product, is substantially similar to the Source Dynamics end-use product.

Alternatively, Source Dynamics could have cited data on the currently registered Makhteshimi-Agan product Parazone 3SL (EPA Reg. No. 66222-130), containing 43.8% paraquat dichloride. We look forward to the comments of the Agency on these conclusions.

6. Does methanol make Paraquat Concentrate "not substantially similar" to registered paraquat products?

The presence of about 6% methanol in our end-use product Paraquat Concentrate does indeed make it "not substantially similar" to other end-use products. Therefore, Source Dynamics addressed these differences with the required acute toxicity and product properties studies appropriate to a formulated end-use product, with the exception of oxidation/reduction discussed above. We have concluded that no further studies are required to specifically support our end-use product.

We wish to point out once again that methanol

As we

said, Source Dynamics has not proposed to register either a technical material or a manufacturing-use material, and it is not necessary to register a technical material in order to register an end-use product.

There are potential impurities of toxicological concern in paraquat dichloride that the Agency would be correct to be concerned about. The Food and Agriculture Organization of the United Nations has set specifications of 1,000 ppm for free 4,4'-bipyridyl and 1 ppm for total terpyridines. Our five-batch analysis determined that these compounds were well below the FAO specifications.

7. Can a second registrant reference data on a canceled product submitted by a prior registrant?

Syngenta has voluntarily withdrawn its registration of products that are similar to the product that Source Dynamics wishes to register. It may be the perception of the Agency that these data are therefore no longer available for citation by the second registrant. However, the legal precedent for this situation was set in 1997 and it was answered affirmatively.

The case involved the Novartis compound metalaxyl and its resolved optical isomer, (R)-metalaxyl, whose common name is mefenoxam. Novartis voluntarily canceled its registrations of metalaxyl and replaced them with registrations for mefenoxam. Nations Ag LLC, a company specializing in registering generic pesticides, initiated legal action against the US EPA and against Novartis in an attempt to gain registration for metalaxyl technical. Nations Ag had been planning to import generic metalaxyl for US sale. Nations Ag alleged that the Novartis cancellation was an attempt to stifle generic competition. Nations Ag asserted that the cancellation effectively would give Novartis another ten years' monopoly by making it difficult and costly for an alternative supplier to obtain registration. Nations Ag further asserted that Novartis relied almost entirely on metalaxyl data to support its safety claims for mefenoxam, and yet the EPA refused to issue a metalaxyl registration to Nations Ag on the grounds that metalaxyl and mefenoxam are not substantially similar. This matter was resolved when the Agency registered Nations Ag Metalaxyl Technical for Seed Treatment on December 5, 1997, and it remains registered today (EPA Reg. No. 70262-8).

MANUFACTURING PROCESS INFORMATION IS NOT INCLUDED

Therefore, Source Dynamics believes it could cite product chemistry data on any of the following canceled or transferred products:

Syngenta's Cyclone Concentrate Herbicide (EPA Reg. No. 100-1074) (43.8% a.i.) and Syngenta's Paraquat Concentrate 3 (EPA Reg. No. 10182-115) (43.5% a.i.) (MRID 44568701 and 44729003)

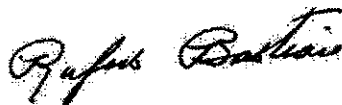
Syngenta's Paraquat Concentrate ES (EPA Reg. No. 10182-362) (45.6% a.i., MRID 44590901)

Griffin Boa Concentrate (EPA Reg. No. 1812-424) (43.5% a.i., MRID 44702603 and 46363603)

Marman Paraquat Concentrate (EPA Reg. No. 48273-6) (43.5% a.i., MRID 44633702)

In summary, we thank the Agency for allowing us to comment on its proposed decision to deny our registration application. On the basis of our explanations here, we ask that the Agency reconsider its proposed decision. We look forward to any further comments that the Agency may have.

Sincerely,



Rufus Bastian
President

References:

1. C. Wollerton, "Paraquat Manufacturing Use Product: Physico-Chemical Data File," ICI Plant Protection Division Report No. RJ0533B (January, 1987).
2. D. Wells, "Paraquat Dichloride: Solubility Measurement for Registration," ICI Plant Protection Division Report No. RJ1101A (April, 1978)
3. G. G. Briggs, "Theoretical and Experimental Relationships Between Soil Absorption, Octanol-Water Partition Coefficients, Water Solubilities, Bioconcentration Factors and the Parachor," Journal of Agricultural and Food Chemistry 29 1050-1059 (1981)
4. J. H. Ross and R. L. Krieger, "Synthesis and Properties of Paraquat (Methyl Viologen) and Other Alkyl Homologues," Journal of Agricultural and Food Chemistry 28 1026-1031 (1980)
5. FAO Specifications and Evaluations for Agricultural Pesticides: Paraquat Dichloride (2003); <http://www.fao.org/AG/AGP/AGPP/Pesticid/Specs/docs/pdf/new/paraquat/pdf>

TABLE 1. PHYSICAL AND CHEMICAL PROPERTIES TEST REQUIREMENTS


FROM 40 CFR § 158.120

Section and title	Test substance		
	Technical grade of active ingredient	Manufacturing-use product	End-use product
63-2 Color	yes	yes	yes
63-3 Physical state	yes	yes	yes
63-4 Odor	yes	yes	yes
63-5 Melting point	yes (solids)	no	no
63-6 Boiling point	yes (liquids)	no	no
63-7 Density, bulk density, or specific gravity	yes	yes	yes
63-8 Solubility	yes	no	no
63-9 Vapor pressure	yes (pure form)	no	no
63-10 Dissociation constant	case-by-case (pure form)	no	no
63-11 Octanol/water partition coefficient	yes, for non-polar organics (pure form)	no	no
63-12 pH	yes	yes	yes
63-13 Stability	yes	no	no
63-14 Oxidizing or reducing	no	yes	yes
63-15 Flammability - flashpoint:	no	yes	yes
- flame extension:	no	no	yes
		(combustible liquids only)	(aerosols only)
63-16 Explodability	no	yes	yes
63-17 Storage stability	no	yes	yes
63-18 Viscosity	no	yes	yes
		(liquids only)	
63-19 Miscibility	no	yes	yes
		(emulsifiable liquids only)	
63-20 Corrosion characteristics	no	yes	yes
		(when packaged in metal, plastic, or paper containers)	
63-21 Dielectric breakdown voltage	no	no	yes (if for use around electrical equipment)

$V = 62.0$ mmol, $u = 53$ (40, 135)



Hope
Johnson/DC/USEPA/US
09/18/2007 09:21 AM

To basket@worldnet.att.net, ZAPHawk@aol.com
cc
bcc
Subject Pending Application 82542-G 75-day Deficiency Letter 

Mr. Bastian & Mr. Hawk,

Attached Below is the 75-Day Deficiency Letter for the pending application 82542-G. A hard copy is also being mailed to you. If this application is not withdrawn, if you do not respond, or if the deficiencies are not completed within the scheduled times of completion, the Agency will terminate any action on this application, and will treat the application as if it has been withdrawn. Please contact myself or the Product Manager Jim Tompkins at 703-305-5697 if you have any questions.



82542-G 75 Day Deficiency Letter.pdf

Thank you,

Hope A. Johnson
U.S. Environmental Protection Agency
Office of Pesticide Programs
Registration Division
Herbicide Branch
Phone: 703-305-5410
Mail Code 7505P



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

SEP 18 2007

Mr. Rufus Bastian
Source Dynamics
10039 E. Troon North Drive
Scottsdale, AZ 85262

Subject: Paraquat Concentrate
EPA File Symbol No. 82542-G
Submission dated March 24, 2007

The application referred to above has been determined, pursuant to 40 CFR 152.105, not to be sufficiently complete to process; therefore, the application is considered deficient. Labeling/ other information as specified below must be submitted before the processing of the application can be completed. If such deficiencies cannot be corrected within 75 days, you must notify the Agency within those 75 days of the date you expect to complete the application. If, after 75 days, you do not respond, or your subsequently fail to complete the application within the scheduled times of completion, the Agency will terminate any action on the application, and will treat the application as if it has been withdrawn by the applicant. Any subsequent submission relating to the application must be submitted as a new application.

1. Your product cannot be determined "substantially similar" from the product chemistry point of view to the cited product EPA Reg. No. 82557-1 for the following reasons:
 - a. Your product contains an impurity of toxicological concern at a level that is not present in the cited product. (See the attached Confidential Appendix)
2. The following guideline data requirements are outstanding:
 - a. The guideline 830.6314 (oxidation/reduction) may not be cited and is outstanding based on your product being unable to be determined substantially similar to the cited product.
 - b. No data was submitted for the guidelines 830.6317 (one year storage stability) and 830.6320 (corrosion characteristics), and therefore these data requirements are outstanding.
3. Based on the determination that your product is not substantially similar to your cited me-too product, and the presence of an impurity of toxicological concern at the level in your formulation, the generic data for the active ingredient in your product cannot be cited. You must generate and requirements on your formulation.

contact Hope Johnson at 703-305-5410.

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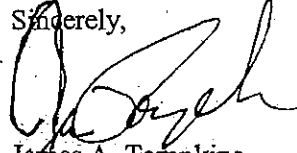
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Sincerely,


James A. Tompkins
Product Manager 25
Herbicide Branch
Registration Division (7505P)

Sent To	Rufus Bastian
Street, Apt. No., or PO Box No.	82542-G
City, State, ZIP	Scottsdale AZ

11 9

CONFIDENTIAL APPENDIX

The impurity of toxicological concern is methanol.

SENDER: COMPLETE THIS SECTION	COMPLETE THIS SECTION ON DELIVERY
<ul style="list-style-type: none"> ■ Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired. ■ Print your name and address on the reverse so that we can return the card to you. ■ Attach this card to the back of the mailpiece, or on the front if space permits. 	<p>A. Signature <input checked="" type="checkbox"/> Agent <input type="checkbox"/> Addressee</p> <p><i>Refus Bastian</i></p>
<p>1. Article Addressed to:</p> <p><i>Refus Bastian</i> <i>Source Dynamics</i> <i>10039 E. Troon North Dr.</i> <i>Scottsdale, AZ 85262</i> <i>(8542-6)</i></p>	<p>B. Received by (Printed Name)</p> <p>C. Date of Delivery <i>92407</i></p>
<p>2. Article Number (Transfer from service label)</p> <p><i>1 111 170014 12890 000411894 107516</i></p>	<p>D. Is delivery address different from item 1? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If YES, enter delivery address below:</p> <p>3. Service Type <input checked="" type="checkbox"/> Certified Mail <input type="checkbox"/> Express Mail <input type="checkbox"/> Registered <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> Insured Mail <input type="checkbox"/> C.O.D.</p> <p>4. Restricted Delivery? (Extra Fee) <input type="checkbox"/> Yes</p>

PS Form 3811, February 2004

Domestic Return Receipt

102595-02-M-1540

DATE OUT: 12 / SEP / 2007

SUBJECT: PRODUCT CHEMISTRY REVIEW OF MP [] EP [X]
DP BARCODE No.: D339354 File Symbol No.: 82542-G
PRODUCT NAME: Paraquat Concentrate
COMPANY: Source Dynamics, LLC
FOOD USE [X] INTEGRATED FORMULATION [X]
PCC: 061601; Decision No. 377428

FROM: Shyam Mathur,
Product Chemistry Team Leader
Technical Review Branch/RD (7505P)

ST Mathur
9/12/07
DM

TO: Hope Johnson / Jim Tompkins, RM 25
Herbicide Branch / RD (7505P)

INTRODUCTION:

The registrant has submitted product chemistry data in support of the registration application for the proposed end-use product paraquat concentrate, produced by Kuo Ching Chemical Co., Ltd., Taichung, Taiwan. The active ingredient was produced by the integration formulation process and was formulated into an end use product by the addition of the diluent and the dyes. The end-use product contained the carry over impurities produced during the manufacture of the paraquat dichloride. The registrant has claimed that the proposed product is substantially similar to the registered product with Reg. No. 82557-1 and has opted to use cite-all method to support the registration of the end-use product. The submitted product chemistry data was assigned MRID Nos. 471067-01, 471067-02, 470911-02, 470911-03, 470911-05, and 470911-06. The registrant has submitted a revised CSF for basic formulation (dated 10-10-07, submitted by e-mail on 10th September 2007) and the product label. TRB has been asked to evaluate product chemistry data submitted for the proposed end use product and determine its similarity to the registered product.

SUMMARY OF FINDINGS

1. The end use product contains paraquat dichloride as the active ingredient with nominal concentrations of 43.20%.
2. The active ingredient paraquat dichloride was produced by two steps integrated process followed by the addition of the diluent and the dyes in desired proportions, without isolating the active ingredient. For details, refer to Confidential Appendix.
3. The CSF for basic formulation (dated 09-10-07) is filled out correctly & completely. The nominal concentration of the active ingredient concurs with the product label claim nominal concentration. The end-use product also contains the carry over impurities produced during the integrated production process of paraquat dichloride. The CSF is in compliance with PR Notice 91-2. All the inert ingredients are cleared by the Agency. The data submitted corresponding to guidelines 830.1550 (product identity & composition) and 830.1750 (certified limits) satisfy the product chemistry data requirements of 40CFR§158.150 & 158.175 respectively [MRID No. 470911-06].
4. The data submitted corresponding to guideline 830.1600 (description of materials used to produce the product), 830.1620 (description of production process), and 830.1670 (discussion on the formation of impurity) satisfy the data requirements of 40CFR §158.160, §158.162, & §158.167 respectively [MRID No. 470911-06].

4. The data submitted corresponding to guideline 830.1800 (enforcement analytical method) satisfy the data requirements of 40CFR§158.180. The validated HPLC-UV technique with internal standard method was used for the determination of the active ingredient in the formulated product. This method employs a Gemini C18 110A, 3.0 mm x 250 mm, 5 µm, column with UV detector operating at 254 nm [MRID No. 471067-01].

5. The data submitted corresponding to guideline 830.1700 (preliminary analysis) satisfy the data requirements of 40CFR§158.170. The five batches of the product were analyzed for the active ingredient and the carry over impurities. The determination of the active ingredient was performed by HPLC with a method of internal standard, using the UV detector. The quantification of paraquat was achieved by comparing the ratio of the analytical standard peak area versus p-toluic acid internal standard peak area and the same ratio determined for a sample containing a known amount of internal standard. For the impurities the combination of GC-FID with external standard and GC-MS methods were used. For more details refer to Confidential Appendix [MRID No. 471067-02 & 470911-03].

6. The data submitted corresponding to guideline 830 series subgroup B (physical-chemical properties) corresponding to guidelines 830.6302 (color), 830.6303 (physical state), 830.6304 (odor), 830.7000 (pH), 830.7300 (density), and 830.7100 (viscosity), satisfy the data requirements of 40CFR§158.190, except for the guidelines 830.6314 (oxidation-reduction), 830.6317 (one year storage stability), 830.6320 (corrosion characteristics) [MRID No. 470911-05].

7. No data was submitted corresponding to guidelines 830.6317 & 830.6320. The registrant must generate & submit the results for the guidelines 830.6317 (one year storage stability) and 830.6320 (corrosion characteristics) for the proposed product.

CONCLUSIONS:

The TRB has reviewed the product chemistry data submitted for the proposed end use product and has concluded that:

1. The product chemistry data submitted & cited corresponding to guidelines 830 Series Subgroup A and Subgroup B are acceptable, except for the guidelines one year storage stability (830.6317) and corrosion characteristics (830.6320) studies.

2. The proposed end use product with File Symbol No. 82542-G was determined not to be substantially similar to the registered product with Reg. No. 82557-1 from the product chemistry point of view for the following reasons:

The proposed product (File Symbol No. 82542-G) contains an impurity of toxicological concern at the level of [REDACTED] which is not present in the registered product with Reg. No. 82557-1.

3. The registrant is advised to generate the studies corresponding to guidelines 830.6314 (oxidation/reduction), 830.6317 (1-year storage stability) and 830.6320 (corrosion characteristics) and submit the results to the Agency.

4. The registrant is advised to include on the product label the statement that it contains methanol.

NOT RELEVANT INFORMATION IS NOT INCLUDED

End-use Product

PRODUCT CHEMISTRY DATA (SERIES 830 Subgroup A & Subgroup B)

Subgroup A	Data Required Fulfilled	MRID No.
830.1550. Chemical Identity (basic CSF)	A	09-10-07
830.1600. Beginning Materials	A	470911-06
830.1620. Production Process	A	" " "
830.1670. Discussion of Impurities	A	" " "
830.1700. Preliminary Analysis	A	471067-02
830.1750. Certified Limits (basic CSF)	A	09-10-07
830.1800. Enforcement Analytical Method (cited)	A	471067-01

Subgroup B cited from MRID No. 459402-01

Subgroup B	Data Required Fulfilled	Value or Qualitat. Descrip.	MRID No.
830.6302. Color	A	Dark green	470911-05
830.6303. Physical State	A	Liquid	" " "
830.6304. Odor	A	Pungent odor	" " "
830.6314. Oxidation/Reduction Action	cited		460988-02
830.6315. Flammability	NA		
830.6316. Explodability	NA		
830.6317. Storage stability	I	1 yr in progress	
830.6319. Miscibility	NA		
830.6320. Corrosion Characteristics	I	1 yr in progress	
830.6321. Dielectric Breakdown. Voltage	NA		
830.7000. pH	A	3.98 @ 22°C	470911-05
830.7100. Viscosity @ 20°C	A	5.077 cps	" " "
@ 40°C	A	3.032 cps	
830.7000. Density/Bulk Density	A	1.151 g/cc @ 25°C	" " "
830.7520. Particle size, fibre length, & diameter distribution	NA		

Explanations: A = The Requirements Were Fulfilled; N = The Requirements Were Not Fulfilled; NA = Not Applicable; G = Data Gap; U = Requires Upgrading; I = Incomplete or In Progress; W = Waived.

The registrant has cited following MRID No. data for the technical:

Table 2: Physical and Chemical Properties of : Paraquat concentrate TGA/MUP				
GLN	Requirement	MRID	Status	Result or Deficiency
830.6302	Color	470911-05		
830.6303	Physical state	" " "		
830.6304	Odor	" " "		
830.6313	Stability to normal and elevated temperatures, metals, and metal ions	460988-02		
830.6314	Oxidation/reduction: chemical incompatibility	" " "		
830.6315	Flammability	" " "		
830.6316	Explosibility	" " "		
830.6317	Storage stability	" " "		
830.6319	Miscibility	" " "		
830.6320	Corrosion characteristics	445909-01		
830.7000	pH	470911-05		
830.7050	UV/Visible absorption	460988-02		
830.7100	Viscosity	470911-05		
830.7200	Melting point	460988-02		
830.7220	Boiling point	" " "		
830.7300	Bulk Density	470911-05		
830.7370	Dissociation constants in water (DC)	460988-02		
830.7550	Partition coefficient	460988-02		
830.7840	Water solubility	460988-02		
830.7950	Vapor pressure	460988-02		

A = Acceptable; N = unacceptable (see Deficiency); N/A = Not Applicable; G = Data gap; I = In progress or need upgrade; U = Up-grade (additional information required)

830.1550. Product identity: (MRID No. 470911-06)

Common Name: paraquat dichloride (ANSI, ISO, BSI, JMAF)

Chemical Name: 1,1'-dimethyl-4,4'-bipyridinium dichloride (CA)

1,1'-dimethyl-4,4'-bipyridinium dichloride (IUPAC)

CASRN: 1910-42-5 (dichloride), 4685-14-7 (dication)

Molecular Formula: $C_{12}H_{14}Cl_2 N_2$ (dichloride)

Molecular Weight: 257.2 (dichloride)

Structure:



Product Name: Paraquat Herbicide

830.1800. Enforcement analytical method: (MRID No.471067-01)

Scope

This method is applicable to the quantitative determination of paraquat active ingredient in paraquat technical sample.
The method has been validated by the analysis of standard solutions and paraquat sample.

Principle of the method

The determination of the active ingredients (a.i.) is performed by HPLC with a method of the internal standard, using the UV detector.

The quantification of paraquat is achieved by comparing the ratio of the analytical standard peak area versus *p*-toluic acid internal standard (I.S.) peak area and the same ratio determined for a sample containing a known amount of I.S.

Chromatographic conditions

HPLC Column	:	ChemService code No. 140
Phenomenex or equivalent	:	Gemini 5 μ m C18 110A, 250 x 3.0 mm i.d.
Detector	:	UV/Vis operating at 254 nm
Column temperature	:	Room temperature
Eluent A	:	10 mM octanesulfonic acid at pH 2
Eluent B	:	acetonitrile
Gradient	:	90:10 A:B for 1 minute from 90:10 A:B to 10:90 A:B in 9 minutes hold 3 minutes from 10:90 A:B to 90:10 A:B in 2 minutes hold 10 minutes
Eluent flow	:	1 mL/min
Volume of injection	:	10 μ L
Paraquat ret. time	:	6.7 minutes
<i>p</i> -Toluic acid ret. time	:	7.9 minutes
Total Analysis Time	:	ca. 25 minutes

Calculations

The paraquat active ingredient content is calculated by the following formula.

$$\text{Paraquat (\% w/w)} = \frac{A_s \times W_{is} \times 100}{A_{is} \times F \times W_s}$$

where:

A_s	=	Paraquat peak area in the test article solution (mean of two injections)
A_{is}	=	Internal standard peak area in the test article solution (mean of two injections)
W_{is}	=	Weight of the internal standard in the test article solution (mg)
W_s	=	Weight of the test article (mg)
F	=	Factor of the relative response of the paraquat compared to I.S.

$$F = \frac{A_{std} \times W_{is} (std) \times 100}{A_{is} (std) \times W_{std} \times P}$$

where:

A_{std}	=	Paraquat peak area in the standard solution (mean of two injections)
$A_{is} (std)$	=	Internal standard peak area in the standard solution (mean of two injections)
$W_{is} (std)$	=	Weight of the internal standard in the standard solution (mg)
W_{std}	=	Weight of the Paraquat analytical standard in standard solution (mg)
P	=	Purity of the Paraquat analytical standard (%)

The method was validated for linearity, accuracy, and precision.

Page 127 is not included in this copy.

Pages _____ through _____ are not included in this copy.

The material not included contains the following type of information:

- ☐ Identity of product inert ingredients.
- ☐ Identity of product impurities.
- ☐ Description of the product manufacturing process.
- ☐ Description of quality control procedures.
- ☐ Identity of the source of product ingredients.
- ☐ Sales or other commercial/financial information.
- ☐ A draft product label.
- ☒ The product confidential statement of formula.
- ☐ Information about a pending registration action.
- ☐ FIFRA registration data.
- ☐ The document is a duplicate of page(s) _____.
- ☐ The document is not responsive to the request.
- ☐ Internal deliberative information.
- ☐ Attorney-Client work product.
- ☐ Claimed Confidential by submitter upon submission to the Agency.
- ☐ Personal Privacy Information

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

Page _____ is not included in this copy.

Pages 128 through 130 are not included in this copy.

The material not included contains the following type of information:

- _____ Identity of product inert ingredients.
- _____ Identity of product impurities.
- ☒ Description of the product manufacturing process.
- _____ Description of quality control procedures.
- _____ Identity of the source of product ingredients.
- _____ Sales or other commercial/financial information.
- _____ A draft product label.
- _____ The product confidential statement of formula.
- _____ Information about a pending registration action.
- _____ FIFRA registration data.
- _____ The document is a duplicate of page(s) _____.
- _____ The document is not responsive to the request.
- _____ Internal deliberative information.
- _____ Attorney-Client work product.
- _____ Claimed Confidential by submitter upon submission to the Agency.
- Personal Privacy Information

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.

DATA PACKAGE BEAN SHEET

DP #: (339354)

Date: 26-Apr-2007

PRIA

Page 1 of 2

Parent DP#:

*** Registration Information ***

Registration: 82542-G - PARAQUAT CONCENTRATE

Company: 82542 - SOURCE DYNAMICS, LLC

Risk Manager: RM 25 - James Tompkins - (703) 305-5697 Room# PY1 S-7337

Risk Manager Reviewer: Hope Johnson HJOHNS03

Sent Date: _____

Calculated Due Date: 14-Oct-2007

Edited Due Date: _____

Type of Registration: Product Registration - Section 3

Action Desc: (R31) NEW PRODUCT;NON-FAST TRACK (INCLUDES REVIEWS OF PRODUCT CHEMIST)

Ingredients: 061601, Paraquat dichloride(43.2%)

*** Data Package Information ***

Expedite: ☐ Yes ☒ No

Date Sent: 26-Apr-2007

Due Back: _____

DP Ingredient: 061601, Paraquat dichloride

DP Title: New Paraquat End Use- Unregistered Tech

CSF Included: ☒ Yes ☐ NoLabel Included: ☒ Yes ☐ No

Parent DP #: _____

Assigned To

Date In

Date Out

Organization: RD / TRB

Last Possible Science Due Date: 14-Sep-2007 ✓

Team Name: CHEM

Science Due Date: _____

Reviewer Name: Shyam Mathan

9/4/07

9/11/07

Sub Data Package Due Date: _____

Contractor Name: _____

*** Studies Sent for Review ***

Printed on Page 2

*** Additional Data Package for this Decision ***

No Additional Data Packages

*** Data Package Instructions ***

The registrant, Source Dynamics LLC, has submitted an application for a me-too end-use paraquat product (me-too with 82557-1). There is a unregistered technical source for this pending product. The registrant has submitted their own product chemistry data (except for citing Syngenta's corrosion characteristics and Sinon's storage stability data). Please review for me-too similarity with Reg. 82557-1, acceptability of CSF and studies submitted. I have enclosed the label, CSF, forms, data matrix, and me-too CSF and label. Thanks! Hope

Did you
complete 704?

L31

PRIA -TRB REVIEW LOG SHEET

Log No.: 21624

Acute TOX Team _____

Product Chemistry Team ✓

PM: 25

DP BARCODE: 339354

PRIA CODE: R31

EPA REG NO.: 82542-G

PRIA DUE DATE: 9-14-07

"IN" TRB DATE: 9-30-07

Primary Review of

TGAI / MUP ✓
(Grp A & B data together)

EP _____
(Grp A & B data together)

TOX studies _____
(All 6 studies or 5 studies +
waiver)

Reviewer: Shyam Mathur Reviewer Start Date: 9/04/07

Actual Reviewer Hours: 30 hr Date Review Completed: 9/12/07

Secondary Review Cycles

Secondary Reviewer (1st): br

Secondary Reviewer (2nd): _____

Secondary Reviewer (3rd): _____

Final Approved Date: 9/17/07 QA/Peer Review Hours: _____

IHAD and Chemistry Database Inventory

Entry created and filed into Database: _____

(entry to be created after secondary review completed)

(Initials)

QA check of database entry: OK 9-18-2007
(Initial / Date)

132



September 10, 2007

Document Processing Desk (APPL)
Office of Pesticide Programs (P7504C)
Environmental Protection Agency
Room S-4900, One Potomac Yard (South Building)
2777 S. Crystal Drive
Arlington, VA 22202

Attn: Hope A. Johnson (PM 25 Team)
Herbicide Branch, Registration Division (Mail Code 7505P)

Dear Ms. Johnson

Subject: Paraquat Concentrate Amended Data Matrix

On the advice of Dr. Shyam Malhur, we wish to amend our data matrix. Here we address every Group B-product properties data requirement. For properties that are applicable to a technical material, we have referenced a 46.2% technical concentrate, EPA Reg. No. 70652-1.

Sincerely,

Rutus Bastian, President
Source Dynamics LLC
rbastian@source-dynamics.com

10039 E. Tatum North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

Fax 480.502.9268

133



ZAPHawk@aol.com
09/10/2007 10:33 PM

To Hope Johnson/DC/USEPA/US@EPA, Shyam
Mathur/DC/USEPA/US@EPA
cc
bcc
Subject Source Dynamics Paraquat Concentrate 82542-G

Dear Ms. Johnson and Dr. Mathur,

Rufus Bastian asked me to send you the attached file.

Regards.


Robert Hawk
Consultant for Source Dynamics LLC

See what's new at AOL.com and [Make AOL Your Homepage](#). Paraquat Matrix 070910.pdf

Form Approved OMB No. 2070-0080 UNITED STATES ENVIRONMENTAL PROTECTION AGENCY 401 M Street, S.W. WASHINGTON, D.C. 20460

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DATA MATRIX

Date September 10, 2007		EPA Reg No./File Symbol 82542-G		Page 1 of 3	
Applicant's/Registrant's Name & Address Source Dynamics LLC 10039 E. Troon North Drive, Scottsdale AZ 85262		Product Paraquat Concentrate			
Ingredient paraquat					
Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
PRODUCT PROPERTIES: GROUP A					
830.1550	product identification and disclosure of ingredients	47091106	Source Dynamics LLC	OWN	
830.1600	description of beginning materials	47091106	Source Dynamics LLC	OWN	
830.1620	description of manufacturing process	47091106	Source Dynamics LLC	OWN	
830.1670	discussion of formation of impurities	47091106	Source Dynamics LLC	OWN	
830.1700	preliminary analysis	47106702	Source Dynamics LLC	OWN	
830.1750	certification of limits	47106702	Source Dynamics LLC	OWN	see also 8570-4
830.1800	enforcement analytical method	47108701	Source Dynamics LLC	OWN	
		47091102	Source Dynamics LLC	OWN	
		47091103	Source Dynamics LLC	OWN	
		47106702	Source Dynamics LLC	OWN	
PRODUCT PROPERTIES: GROUP B					
830.6302	color	47091105	Source Dynamics LLC	OWN	
830.6303	physical state	47091105	Source Dynamics LLC	OWN	
Signature 			Name and Title: Rufus Bastian, President		Date: Sept. 10, 2007

Form Approved OMB No. 2070-0060 UNITED STATES ENVIRONMENTAL PROTECTION AGENCY 401 M Street, S.W. WASHINGTON, D.C. 20460

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DATA MATRIX

Date September 10, 2007		EPA Reg No./File Symbol 82542-G		Page 2 of 3	
Applicant's/Registrant's Name & Address Source Dynamics LLC 10039 E. Troon North Drive, Scottsdale AZ 85262		Product Paraquat Concentrate			
Ingredient paraquat					
Guideline Reference Number	Guideline Study Name	MIRID Number	Submitter	Status	Note
830.6304	odor	47091105	Source Dynamics LLC		
830.6313	stability to normal and elevated temperatures	46098802	Sinon	PAY	46.2% technical
830.6314	oxidation / reduction: chemical incompatibility	46098802	Sinon	PAY	46.2% technical
830.6315	flammability	46098802	Sinon	PAY	46.2% technical
830.6316	explosibility	46098802	Sinon	PAY	46.2% technical
830.6317	storage stability	46098802	Sinon	PAY	Source Dynamics study in progress
630.6319	miscibility	46098802	Sinon	PAY	46.2% technical
830.6320	corrosion characteristics	44590901	Syngenta	PAY	Source Dynamics study in progress
830.6321	dielectric breakdown voltage		not applicable		
830.7000	pH	47091105	Source Dynamics LLC	OWN	
830.7050	UV / visible absorption	46098802	Sinon	PAY	46.2% technical
830.7100	viscosity	47091105	Source Dynamics LLC	OWN	
830.7200	melting point	46098802	Sinon	PAY	46.2% technical
830.7220	boiling point	46098802	Sinon	PAY	46.2% technical
Signature 			Name and Title: Rufus Bastian, President		
			Date: Sept. 10, 2007		

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DATA MATRIX

Date September 10, 2007		EPA Reg No./File Symbol 82542-G		Page 3 of 3	
Applicant's/Registrant's Name & Address Source Dynamics LLC 10039 E. Troon North Drive, Scottsdale AZ 85262		Product Paraquat Concentrate			
Ingredient paraquat					
Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
830.7300	density / relative density	47091105	Source Dynamics LLC	OWN	
830.7370	dissociation constant in water	46098802	Sinon	PAY	46.2% technical
830.7560	octanol / water partition coefficient	46098802	Sinon	PAY	46.2% technical
830.7840	water solubility	46098802	Sinon	PAY	46.2% technical
830.7950	vapor pressure	46098802	Sinon	PAY	46.2% technical
ACUTE TOXICITY					
870.1100	acute oral toxicity	47091107	Source Dynamics LLC	OWN	
870.1200	acute dermal toxicity	47091108	Source Dynamics LLC	OWN	
870.1300	acute inhalation toxicity	47091109	Source Dynamics LLC	OWN	
870.2400	acute eye irritation	46098805	Sinon	PAY	
870.2500	acute dermal irritation	47091110	Source Dynamics LLC	OWN	
870.2600	skin sensitization	47091111	Source Dynamics LLC	OWN	
Signature <i>Rufus Bastian</i>			Name and Title: Rufus Bastian, President		Date: Sept. 10, 2007



ZAPHawk@aol.com
09/10/2007 10:33 PM

To Hope Johnson/DC/USEPA/US@EPA, Shyam
Mathur/DC/USEPA/US@EPA

cc

bcc

Subject Source Dynamics Paraquat Concentrate 82542-G

Dear Ms. Johnson and Dr. Mathur,

Rufus Bastian asked me to send you the attached file.

Regards.

Robert Hawk
Consultant for Source Dynamics LLC



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September 10, 2007

Document Processing Desk (APPL)
Office of Pesticide Programs (P7504C)
Environmental Protection Agency
Room S-4900, One Potomac Yard (South Building)
2777 S. Crystal Drive
Arlington, VA 22202

Attn: Hope A. Johnson (PM 25 Team)
Herbicide Branch, Registration Division (Mail Code 7505P)

Dear Ms. Johnson:

Subject: Paraquat Concentrate: Amended Data Matrix

On the advice of Dr. Shyam Mathur, we wish to amend our data matrix. Here we address every Group B product properties data requirement. For properties that are applicable to a technical material, we have referenced a 46.2% technical concentrate, EPA Reg. No. 70552-1.

Sincerely,

Rufus Bastian, President
Source Dynamics LLC
baskel@worldnet.att.net

10039 E. Troon North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

Fax 480.502.9268

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DATA MATRIX

September 10, 2007

EPA Reg No./File Symbol: 82542-G

Page 1 of 3

Submitter's Name & Address:
 Source Dynamics LLC
 3 E. Troon North Drive, Scottsdale AZ 85262

Product:
 Paraquat Concentrate

Client: Paraquat

File Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
GROUP A					
550	product identification and disclosure of ingredients	47091106	Source Dynamics LLC	OWN	
600	description of beginning materials	47091106	Source Dynamics LLC	OWN	
620	description of manufacturing process	47091106	Source Dynamics LLC	OWN	
770	discussion of formation of impurities	47091106	Source Dynamics LLC	OWN	
700	preliminary analysis	47106702	Source Dynamics LLC	OWN	
750	certification of limits	47106702	Source Dynamics LLC	OWN	
800	enforcement analytical method	47106701	Source Dynamics LLC	OWN	see also 8570-4
		47091102	Source Dynamics LLC	OWN	
		47091103	Source Dynamics LLC	OWN	
		47106702	Source Dynamics LLC	OWN	
GROUP B					
302	color	47091105	Source Dynamics LLC	OWN	
303	physical state	47091105	Source Dynamics LLC	OWN	
Date: Sept. 10, 2007					

Rufus Bastian
 Name and Title: Rufus Bastian, President

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DATA MATRIX

September 10, 2007	EPA Reg No./File Symbol: 82542-G	Page 2 of 3
Applicant's/Registrant's Name & Address Source Dynamics LLC 039 E. Troon North Drive, Scottsdale AZ 85262	Product Paraquat Concentrate	

Product paraquat

Guideline Reference Number	Guideline Study Name	MSRD Number	Submitter	Status	Note
0.6304	odor	47091105	Source Dynamics LLC	PAY	46.2% technical
0.6313	stability to normal and elevated temperatures	46098802	Simon	PAY	46.2% technical
0.6314	oxidation/reduction; chemical incompatibility	46098802	Simon	PAY	46.2% technical
0.6315	flammability	46098802	Simon	PAY	46.2% technical
0.6316	explosibility	46098802	Simon	PAY	46.2% technical
17	storage stability	46098802	Simon	PAY	Source Dynamics study in progress
0.6319	miscibility	46098802	Simon	PAY	46.2% technical
0.6320	corrosion characteristics	44590901	Syngenta	PAY	Source Dynamics study in progress
0.6321	dielectric breakdown voltage		not applicable		
1.7000	pH	47091105	Source Dynamics LLC	OWN	
1.7050	UV / visible absorption	46098802	Simon	PAY	46.2% technical
1.7100	viscosity	47091105	Source Dynamics LLC	OWN	
1.7200	melting point	46098802	Simon	PAY	46.2% technical
1.7220	boiling point	46098802	Simon	PAY	46.2% technical

Name and Title: Rufus Bastian, President

Date: Sept. 10, 2007

Rufus Bastian

September 10, 2007

EPA Reg No./File Symbol 82542-G

Page 3 of 3

Participant's Name & Address

9 E. Troon North Drive, Scottsdale AZ 85262

client paraquat

Sl#	Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
300		density / relative density	47091105	Source Dynamics LLC	OWN	
370		dissociation constant in water	46098802	Simon	PAY	46.2% technical
550		octanol / water partition coefficient	48098802	Simon	PAY	46.2% technical
840		water solubility	46098802	Simon	PAY	46.2% technical
150		vapor pressure	46098802	Simon	PAY	46.2% technical
ETOXICITY						
100		acute oral toxicity	47091107	Source Dynamics LLC	OWN	
200		acute dermal toxicity	47091108	Source Dynamics LLC	OWN	
300		acute inhalation toxicity	47091109	Source Dynamics LLC	OWN	
400		acute eye irritation	46098805	Simon	PAY	
500		acute dermal irritation	47091110	Source Dynamics LLC	OWN	
600		skin sensitization	47091111	Source Dynamics LLC	OWN	

Julius Rosenberg

Name and Title: Rufus Bastian, President

Date: Sept. 10,
2007



INERT INGREDIENT INFORMATION IS NOT INCLUDED

September 10, 2007

Document Processing Desk (APPL)
Office of Pesticide Programs (P7504C)
Environmental Protection Agency
Room S-4800, One Potomac Yard (South Building)
2777 S. Crystal Drive
Arlington, VA 22202

Attn: Hope A. Johnson (PM 25 Team)
Herbicide Branch, Registration Division (Mail Code 7505P)

Dear Ms. Johnson:

Subject: Parequat Concentrate: Revised CSF

Dr. Shyam Mathur has noted a typographical error in one of the ingredients. The dye should have been identified as [REDACTED] rather than [REDACTED]. Please find a corrected Confidential Statement of Formula enclosed. We apologize for the error.

Sincerely,

Rufus Bastian, President
Source Dynamics LLC
baskel@worldnet.att.net

10039 E. Troon North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

Fax 480.502.9268

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460
OFFICE OF PREVENTION, PESTICIDES AND TOXIC SUBSTANCES



30/AUG/2007

MEMORANDUM

Subject: EPA File Symbol: 82542-G Paraquat Concentrate
DP Barcode: 339355
Decision No: 377428
PC Code: 061601

From: Masih Hashim, Toxicologist
Technical Review Branch
Registration Division (7505 P)

MLH
B. Hashim
8-30-2007

To: Joanne Miller, RM 25
Herbicide Branch
Registration Division (7505 P)

Applicant: Source Dynamics, LLC
Scottsdale, AZ 85262

FORMULATION FROM LABEL:

<u>Active Ingredient(s):</u>	<u>%</u>
Paraquat dichloride	43.8
Inert ingredients	<u>56.2</u>
Total:	100.0

ACTION REQUIRED: RM requested a review of the acute toxicity data to support the registration of File Symbol #82542-G.

BACKGROUND: Source Dynamics, LLC submitted a pack of six toxicity studies to support the registration of the Paraquat Concentrate. The toxicity studies were conducted at the Product Safety Laboratories, Dayton, NJ.

RECOMMENDATIONS: Each of the six toxicity studies (MRID 47091107-12) is in compliance with the Sub Division F guidelines. These studies are classified as shown in the table (below):

acute oral toxicity	II	acceptable	MRID 47091107
acute dermal toxicity	III	acceptable	MRID 47091108
acute inhalation toxicity	I	acceptable	MRID 47091109
primary eye irritation	I	waived*	
primary dermal irritation	IV	acceptable	MRID 47091110
dermal sensitization study	pos.	acceptable	MRID 47091111

*Note: As per the label claim, and the telephone conversation with the Registrant (8-30-07), TRB has granted a waiver to the eye irritation study.

Labeling:

PRODUCT ID #: 082542-00003

PRODUCT NAME:

PRECAUTIONARY STATEMENTS

SIGNAL WORD: DANGER

POISON &

SPANISH SIGNAL WORD: PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.

(If you do not understand the label, find someone to explain it to you in detail.)

Hazards to Humans and Domestic Animals:

Restricted Use Pesticide due to toxicity categories. For retail sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification. Child Resistant Packaging Required.

Fatal if inhaled. Corrosive. Causes irreversible eye damage. May be fatal if swallowed. Harmful if absorbed through skin. Do not breathe spray mist. Remove and wash contaminated clothing before reuse. Do not get in eyes or on clothing. Wear protective eyewear (goggles, face shield, or safety glasses). Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Avoid contact with skin, eyes or clothing. Wear long-sleeved shirt and long pants, socks, shoes, and gloves. Wear: Long-sleeved shirt and long pants, Socks, Shoes, and gloves.

For handling activities, use a non-powered, NIOSH-approved air purifying cartridge respirator equipped with an organic-vapor (OV) removing cartridge plus an N-, R- or P-series filter, OR a non-powered air

purifying canister-type respirator equipped with an organic vapor canister that uses an N-, R-, or P-series air-purifying filter.

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

First Aid:

If inhaled:

- Move the person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for further treatment advice.

If in eyes:

- Hold eye open and rinse slowly and gently with water for 15-20 minutes.
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.
- Call a poison control center or doctor for treatment advice.

If swallowed:

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to by a poison control center or doctor.
- Do not give anything to an unconscious person.

If on skin:

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15-20 minutes.
- Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN: Note to PM/CRM/Registrant: The proposed label should contain a Note to Physician which addresses the category I Acute Inhalation Toxicity, Primary Eye Irritant toxicity. The following statements are suggested types of information that may be included, if applicable:

- technical information on symptomatology;
- use of supportive treatments to maintain life functions;
- medicine that will counteract the specific physiological effects of the pesticide;
- company telephone number to specific medical personnel who can provide specialized medical advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-800-xxx-xxxx for emergency medical treatment information.

Risk Manager: 25

TYPE OF STUDY: Acute Oral Study in Rats (OPPTS 870.1300, OECD 425)

TEST MATERIAL: Paraquat 43.8% Tech (Paraquat dichloride 48%), dark green liquid, specific gravity =1.157 g/mL

CITATION: Durando, J. (2007). Acute Oral Toxicity Up and Down Procedure-Eurofins/Product Safety Laboratories, Dayton, NJ 08810. Study No. 21077 dated 3-15-07. MRID 47091107. Unpublished

SPONSOR: Source Dynamics, LLC.

EXECUTIVE SUMMARY: LD₅₀ of Paraquat 43.8% Tech was determined in an Up and Down Procedure (MRID 47091107) in female SD rats (age 10-12 wks, 185-230g, source: Ace Animals, Boyertown, PA). Based on previous information one animal was initially dosed at 174 mg/kg with the test substance (as received). Additional animals were sequentially dosed at 174, 550 and 1750 mg/kg. Evaluation parameters included signs of gross toxicity and mortality for a subsequent period of 7 and 14 days. Body weights and necropsy findings were recorded on dead/sacrificed animals.

All three animals dosed at 174 mg/kg survived the test. They appeared normal with no clinical signs, and no adverse effects on the weight gains. There were no gross lesions at terminal necropsy. Animals dosed at 550 mg/kg (4 animals) died within 8 days of the test substance administration. Prior to death animals were hypoactive, had reduced fecal volume, soft feces, showed hunched posture/piloerection, and lost body weight. Necropsy of decedents showed discoloration of the intestines and liver.

One animal dosed at 1750 mg/kg died within a day. Clinical signs included hypoactivity. Gross lesions at necropsy showed discoloration of intestines.

The formulation in female rats was 254 mg/kg (approximate 95% C.I =174-550 mg/kg)

Under the conditions of this study the formulation is in EPA Toxicity Category II in terms of oral toxicity.

This study is classified as Acceptable. The study meets the guideline requirement for an acute oral study (OPPTS 870.1100) in the rat.

COMPLIANCE: Signed and dated GLP, Quality Assurance, and Data Confidentiality statements were provided.

RESULTS and DISCUSSION:

A. Mortality: Several animals died on the study (4 of 4 at 550, and 1 of 1 at 1750 mg/kg).

Three animals dosed at 174 mg/kg survived the test. They appeared normal with no clinical signs, there were no adverse effects on the weight gains.

Animals dosed at 550 mg/kg (4 of 4) died within 8 days of the test substance administration. Prior to death animals were hypoactive, had reduced fecal volume, soft feces, showed hunched posture/piloerection

One animal dosed at 1750 mg/kg died within a day. Clinical signs included "hypoactivity".

A. Necropsy: Necropsy of the decedent (550mg/kg) showed discoloration of the intestine and liver. Animal at 1750 mg/kg showed discoloration of intestines.

D. Reviewer's Conclusions: The product is in EPA Tox Category II, LD₅₀ was 254 mg/kg.

AOT425statpgm (Version: 1.0) Test Results and Recommendations
Acute Oral Toxicity (OECD Test Guideline 425) Statistical Program

Date/Time: Thursday, August 30, 2007, 8:58:11 AM

Data file name: work. dat

Last modified: 8/30/2007 8:58:06 AM

Test/Substance: Enter test description.

Test type: Main Test

Limit dose (mg/kg): 2000

Assumed LD50 (mg/kg): Default

Assumed sigma (mg/kg): 0.5

Recommended dose progression: 2000, 550, 175, 55, 17.5, 5.5, 1.75

DATA:

Test Seq.	Animal ID (mg/kg)	Dose	Short-term Result	Long-term Result
-----------	-------------------	------	-------------------	------------------

1	3101	174	O	O
2	3102	550	O	X
3	3103	1750	X	X
4	3104	550	X	X
5	3105	174	O	O
6	3106	550	X	X
7	3107	174	O	O
8	3108	550	X	X

(X = Died, O = Survived)

148

Dose Recommendation: The main test is complete.

Stopping criteria met: LR criterion.

SUMMARY OF LONG-TERM RESULTS:

Dose	O	X	Total
174	3	0	3
550	0	4	4
1750	0	1	1
All Doses	3	5	8

Statistical Estimate based on long term outcomes:

Estimated LD50 = 254 (Based on an assumed sigma of 0.5).
Approximate 95% confidence interval is 174 to 550.

Reviewer: M. Hashim

Date: 8-29-07

Risk Manager (EPA): 25

TYPE OF STUDY: Acute Dermal Toxicity- Rats (OPPTS 870.1200; OECD 402)

TEST MATERIAL: Paraquat 43.8% Tech (Paraquat dichloride 48%), dark green liquid, PSL
Reference No. 061026-4G

CITATION: Lowe, C. (2007). Acute Dermal Toxicity Study in Rats- Limit Test. Eurofins/Product
Safety Laboratories, Dayton, NJ 08810. Study No. 21078 dated 2-20-07. MRID 47091108.
Unpublished

SPONSOR: Source Dynamics, LLC.

EXECUTIVE SUMMARY: Dermal LD₅₀ of Paraquat 43.8% Tech was determined in a limit test (MRID 47091108) in SD rats. Ten animals, 5/sex (9-10 wks, wt. males 307-316g, female 209-218g, source- Ace Animals, Boyertown, PA) were treated by topical application of the (undiluted) test material (as received) on 10% of body surface area at 2000 mg/kg. The test site was covered by a gauze pad and secured by a Dura pore tape over the trunk of each animal. Animals were observed for mortality, clinical signs, and behavior changes for 14 days. Weekly body weights and terminal necropsy findings were recorded.

Dermal LD₅₀ of the test material in male and/or female rats was >2000 mg/kg

All animals survived the test and gained body weight during the course of the study. There was dermal irritation (edema, erythema /or eschar) in 6 of 10 animals from day 1-14. Four of 10 animals showed irregular respiration, which subsided by day 2. Terminal necropsy findings were not significant.

The product is classified as EPA Tox Category III.

This acute dermal study is Acceptable, it does satisfy the guideline requirements for an acute dermal study in the rat (OPPTS 870.1200; OECD 402).

COMPLIANCE: Signed and dated GLP, Quality Assurance, and Data confidentiality statements were provided.

RESULTS and DISCUSSION:

Table1. Outcome of the Dermal Study (number died/total numbers)

Dose	Mortality/ Number Tested		
(mg/kg bw)	Male	Female	Combined
2000	0 / 5	0 / 5	0 / 10

A. There were no deaths on the study.

B. Clinical observations: All animals survived the test and gained body weight during the course of the study. There was dermal irritation (edema, erythema /or eschar) in 6 of 10 animals from day 1-14. Four of 10 animals showed irregular respiration, which subsided by day 2.

C. Gross Necropsy - Necropsy findings were unremarkable.

D. Reviewer's Conclusions: The LD₅₀ of the test formulation is considered as >2000 mg/kg. The product is in EPA Toxicity Category III in terms of dermal toxicity.

Risk Manager (EPA): 25

TYPE OF STUDY: Acute Inhalation Study in Rats (OPPTS 870.1300, OECD 403)

TEST MATERIAL: Paraquat 43.8% Tech (Paraquat dichloride 48%), dark green liquid, PSI Ref. No. 061026-4G

CITATION: Lowe, C. (2007). Acute Inhalation Toxicity Study in Rats- Limit Test. Eurofins/Product Safety Laboratories, Dayton, NJ 08810. Study No. 21079 dated 3-14-07. MRID 47091109. Unpublished

SPONSOR: Source Dynamics, LLC.

EXECUTIVE SUMMARY: The LC₅₀ of Paraquat 43.8% Tech was determined in an acute inhalation (nose only) limit test in SD rats (MRID 47091109). Five rats/sex, m/f (age 9-10 weeks, wt. males- 297-352g, females 226-246g, source-Ace Animals, Inc., Boyertown, PA) were subjected to a single inhalation exposure of the test substance at 0.051 mg/L for 4 hours. The MMAD was 2.15 µm (GSD 2.08). Animals were observed for behavioral changes and signs of toxicity for the duration of study. Body weights and terminal necropsy findings were recorded.

LC₅₀ male / female rats was < 0.051 mg/L (gravimetric)

Nine of 10 animals died within 4 days of inhalation exposure, and one animal was euthanized for humane reasons (emaciated/moribund). Within a day clinical signs in rats were abnormal respiration, facial staining, hypoactivity, piloerection/reduced fecal volume. Gross necropsy of the decedents (including moribund animal) showed discoloration of lungs/intestines, edema of lungs, gaseous distension of intestines, and rigor mortis (not related to the test).

The acute inhalation study is Acceptable. It does satisfy the guideline requirements of an acute inhalation study (OPPTS 870.1300; OECD 403) in the rat. The formulation is in EPA Toxicity Category I by the inhalation exposure route.

COMPLIANCE: Signed and dated GLP, Quality Assurance, and Data Confidentiality statements were provided.

RESULTS and DISCUSSION:

Table 1. Mortality / Total No. of Animals

Mean achieved atmosphere concentration mg/L	MMAD μ m	GSD	Mortality/Number Tested		
			male	female	total
0.05	2.15	2.08	5/5	5/5	10/10*

* includes a moribund animal that was euthanized.

Test Atmosphere / Chamber Description:

Gravimetric Conc.	0.05
Chamber size	6.7 L
Total air flow mean	25.7
Chamber tube Temperature:	21-23 ⁰ C
Relative humidity:	35-38%

Particle size determination was made by multi stage cascade impactor

A. Mortality – Nine of 10 animals died within 4 days of inhalation exposure, and one animal was euthanized for humane reasons (emaciated/moribund), Table 1.

B. Clinical observations: Within one day of exposure rats showed abnormal respiration, facial staining, hypoactivity, piloerection/reduced fecal volume.

C. Necropsy - Gross necropsy of the decedents (including moribund animal) showed edema of lungs, discoloration of lungs/intestines, gaseous distension of intestines.

D. Reviewer's Conclusion: The test substance is of high toxicity (LC_{50} is < 0.051 mg/L) in rats. The formulation is classified as Toxicity Category I.

Risk Manager (EPA): 25

TYPE OF STUDY: Primary Skin Irritation Study (OPPTS 870.2500, OECD 404)

TEST MATERIAL: Paraquat 43.8% Tech (Paraquat dichloride 48%), dark green liquid, pH 3.98 (1% w/w solution)

CITATION: Lowe, C. (2007). Primary Dermal Irritation Study in Rabbits. Eurofins/Product Safety Laboratories, Dayton, NJ 08810. Study No. 21081 dated 2-20-07. MRID 47091110. Unpublished

SPONSOR: Source Dynamics, LLC.

EXECUTIVE SUMMARY: In a primary dermal irritation study (MRID 47091111), 3 young adult NZW rabbits (sex- male, source: Robinson Services, Clemmons, NC) were topically treated with 0.5 mL of Paraquat 43.8% Tech for 4 hours. Initially one rabbit was treated by applying on 3 treatment sites and removing patches at 3 minutes, one hour, and four hours. Each test site was covered with a gauze pad and wrapped around the trunk by a semioclusive Micropore tape. All test sites were evaluated for corrosion one hour after patch removal. Subsequent evaluations were performed at 24, 48 and 72 hours after the patch removal. Additional 2 rabbits were treated for 4 hours. After removing the patch / dressing, the irritation was scored by Draize Method for 72 hours.

Application of the test material caused in the first animal unthrifty appearance, (colored) nasal discharge, and excessive salivation. There was no dermal irritation at 3 minute exposure site. Very slight erythema was noted at 1 hour post exposure site, an hour after patch removal. Erythema cleared from this site by 72 hours. Two additional animals at in the second phase showed very slight erythema and very slight edema at 4-hr exposure sites. Animals were free from irritation by 72 hours.

Under the conditions of this study, the test article is slightly irritating to the rabbit skin. The test article is in EPA Tox Category IV.

This study is classified as Acceptable. It does satisfy the guideline requirement of a primary dermal irritation study (OPPTS 870.2500; OECD 404) in the rabbit.

COMPLIANCE: Signed and dated GLP, Quality Assurance, and Data Confidentiality statements were provided.

RESULTS and DISCUSSION:

A. Observations - Application of the test material caused in the first animal unthrifty appearance, (colored) nasal discharge, and excessive salivation. There was no dermal irritation at 3 minute exposure site. Very slight erythema was noted at 1 hour post exposure site, an hour after patch removal. Erythema cleared from this site by 72 hours.

Two additional animals at in the second phase showed very slight erythema and very slight edema at 4-hr exposure sites, one hour after patch removal. Animals were free from irritation by 72 hours. The PDII was 1.0.

B. Results - See table below.

Table 1. Skin Irritation incidence (No. of rabbits with lesion/total No.)

Animal No	erythema	edema	mean score*
=< 1 hr	3/3	3/3	2.0
24 hrs	3/3	0/3	1.0
48 hrs	3/3	0/3	1.0
72 hrs	0/3	0/3	0.0

*severity

C. Reviewer's Conclusions: The test formulation is in EPA Toxicity Category IV for dermal irritation..

Risk Manager (EPA): 25

STUDY TYPE: Dermal Sensitization – Guinea pig; (OPPTS 870.2600)

TEST MATERIAL: Paraquat 43.8% Tech (Paraquat dichloride 48%), dark green liquid

CITATION: Lowe, C. (2007). Dermal Sensitization Study in Guinea Pigs. Eurofins/Product Safety Laboratories, Dayton, NJ 08810. Study No. 21082 dated 2-12-07. MRID 47091111. Unpublished

SPONSOR: Source Dynamics, LLC.

EXECUTIVE SUMMARY : A Buehler study (MRID 47091111) was performed to assess the sensitization potential of Paraquat 43.8% Tech in guinea pigs. Thirty albino guinea pigs, 20 test and 10 controls (Hartley, 313-436g adult male, source: Elm Hill Breeding Labs, Chelmsford, MA) were used for the test. Twenty animals were topically applied with (0.4 ml) of the undiluted test material for 6 hours, once a week for 3 consecutive weeks through the induction period. Due to severity of irritation 0.4 mL 80% w/w test material in distilled water was used for second and third inductions. Twenty seven days after the first induction, 0.4 ml (HNIC)⁺ of the test material (diluted to 12% w/w mixture in distilled water) was applied as a challenge dose to the naïve skin site of each guinea pig. Controls were only exposed to the challenge dose as 12% w/w mixture of the test material in distilled water. The test and control animals were evaluated for dermal reaction (erythema) at 24 and 48 hours after the challenge dose.

According to the text report, six of 20 test animals died before the challenge phase. Prior to death these animals were hypoactive and had irregular respiration / unthrifty appearance. Four out of 8 surviving test animals were hypoactive after the induction phase.

Six of 14 test animals showed faint erythema at 24 and 48 hours after the challenge dose. Very faint erythema was noted for most other sites after the challenge dose. Six of 10 naïve control animals showed very faint erythema at 24 hours following the challenge dose, with irritation persisting through 48 hours in 3 of 10 animals.

Historical positive controls showed appropriate results, and the test was conducted within six months as required.

The test substance is a contact sensitizer.

COMPLIANCE: This study is Acceptable. It does not quite meet the guideline requirement of a sensitization study (OPPTS 870.2600) in the guinea pig. GLP signed papers were provided.

+ highest non irritating concentration in the screening test.

PROCEDURE: A Buehler study (MRID 47091111) was performed to assess the sensitization potential Paraquat 43.8% Tech in guinea pigs. Thirty albino guinea pigs, 20 test and 10 controls (Hartley, 313-436g adult male, source: Elm Hill Breeding Labs, Chelmsford, MA) were used for the test. Twenty animals were topically applied with (0.4 ml) of the undiluted test material for 6 hours, once a week for 3 consecutive weeks through the induction period. Due to severity of irritation only 80% w/w test material in distilled water was used for second and third inductions. Twenty seven days after the first induction, 0.4 ml (HNIC)⁺ of the test material (diluted to 12% w/w mixture in distilled water) was applied as a challenge dose to the naïve skin site of each guinea pig. Controls were only exposed to the challenge dose as 12% w/w mixture of the test material in distilled water. The test and control animals were evaluated for dermal reaction (erythema) at 24 and 48 hours after the challenge dose.

- A. Induction – Test material 100%, then 80% (w/w in distilled water) following the first induction.
- B. Challenge - Topical- 12% w/w test material in distilled water.
- C. Controls - 10 animals- 12% w/w mixture in distilled water.
- D. Positive Control- Historical control (HCA) 75% w/w mixture in mineral oil (10-11-06). This positive control as referenced was conducted within six months of the main study.

II. RESULTS and DISCUSSION:

Six of 20 test animals died before the challenge phase. Prior to death these animals were hypoactive and showed irregular respiration / unthrifty appearance. Four out of 8 surviving test animals were hypoactive after the induction phase.

	<u>Test group</u>	<u>Control group</u>
Positive	6/14 animals (24/48 hrs)	6/10 animals (24 hrs) and 3/10 animals (48 hrs)

According to the report text six of 14 test animals showed faint erythema 24 and 48 hours after the challenge dose. Very faint erythema was noted for most other sites after the challenge dose. Six of 10 naïve control animals showed very faint erythema at 24 hours following the challenge dose, irritation persisting through 48 hours in 3 of 10 animals.

Historical positive controls showed appropriate results.

Reviewer's Conclusions: The test substance is a contact sensitizer.

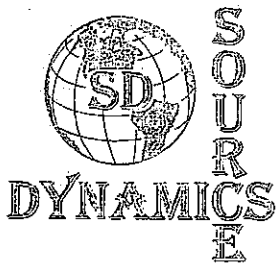
#82542-G Paraquat Concentrate
P.C. Code 061601

ONE LINER:

Barcode: 339355

Date: TEST MATERIAL:

Study/ Species/ Lab/ # / date	MRID	Results	Tox. Cat	Core Grade
Acute oral toxicity/rat/Product Safety /21077/ 3-15-07	47091107	Oral LD ₅₀ is 254 mg/kg females	II	A
Acute dermal toxicity/rat/ Product Safety Lab/ # 21078/ 2-20-07	47091108	Dermal LD ₅₀ is > 2000 mg /kg, m/f	III	A
Acute inhalation toxicity/rat/ Product Safety/ 21079/ 3-14-07	47091109	LC ₅₀ <0.051 mg/L males/females	I	A
Dermal irritation/ rabbit/ Product Safety Lab/ 21081/ 2-20-07	47091110	Mild irritant PDII 1.0	IV	A
Dermal sensitization/ guinea pig/ Product Safety/ #21082/ 2-12-07	47091111	contact sensitizer	-	A



August 27, 2007

Document Processing Desk (APPL)
Office of Pesticide Programs (P7504C)
Environmental Protection Agency
Room S-4900, One Potomac Yard (South Building)
2777 S. Crystal Drive
Arlington, VA 22202

Attn: Hope A. Johnson (PM 25 Team)
Herbicide Branch, Registration Division (Mail Code 7505P)

Dear Ms. Johnson:

Subject: Paraquat Concentrate: Revised CSF

Thank you for your e-mail today. Please find a corrected Confidential Statement of Formula enclosed. We apologize for the error.

Sincerely,

Rufus Bastian, President
Source Dynamics LLC
baskei@worldnet.att.net

10039 E. Troon North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

159
Fax 480.502.9268



"Rufus Bastian"
<baskel@worldnet.att.net>
08/28/2007 11:13 AM

To Hope Johnson/DC/USEPA/US@EPA
cc
bcc
Subject FW: Paraquat CSF

Dear Hope,

We are sorry about the mistake. Our registration manager overlooked the detail. Thank you for calling it to our attention. Attached is a revised CSF. I believe this one is correct. A signed paper copy is also being sent to you although you may use this e-mail copy. Please let us know when you expect our registration to be granted.

Sincerely,

Rufus Bastian

-----Original Message-----

From: Johnson.Hope@epamail.epa.gov [mailto:Johnson.Hope@epamail.epa.gov]
Sent: Monday, August 27, 2007 8:00 AM
To: Rufus Bastian
Subject: Re: FW: Paraquat CSF

Mr. Bastian,

Thank for the CSF, however, I see one issue with the changes. While you have appropriately revised the amounts in columns 13 B, 14 A and 14 B, the amount of the components in formulation for the total weight column (13A) have not been appropriately revised. Please revise rows 2 and 6 in column 13A to reflect the revised amounts in 13B, 14A and 14B. Please call if you have any questions.

Thank you,

Hope A. Johnson
U.S. Environmental Protection Agency
Office of Pesticide Programs
Registration Division
Herbicide Branch
Phone: 703-305-5410
Mail Code 7505P

"Rufus Bastian"
<baskel@worldnet
.att.net>

To
Hope Johnson/DC/USEPA/US@EPA
08/24/2007 11:05
AM cc

Subject
FW: Paraquat CSF

160

MANUFACTURING PROCESS INFORMATION IS NOT INCLUDED

Dear Ms. Johnson,

Attached, per your request, is a revised CSF for Source Dynamic's Paraquat product increasing the upper level of the emetic from [REDACTED]. I wanted to e-mail this to you for promptness and will also express mail an original signed copy. I will call you to make sure you have received this.

Thank you for your assistance with this matter.

Sincerely,

Rufus Bastian

[attachment "Paraquat CSF 0708240001.pdf" deleted by Hope Johnson/DC/USEPA/US]



Get a sneak peek of the all-new AOL.com. Paraquat CSF 070824.pdf

161



"Rufus Bastian"
<baskel@worldnet.att.net>
08/24/2007 11:05 AM

To Hope Johnson/DC/USEPA/US@EPA
cc
bcc
Subject FW: Paraquat CSF

Dear Ms. Johnson,

Attached, per your request, is a revised CSF for Source Dynamic's Paraquat product increasing the upper level of the emetic from [REDACTED] I wanted to e-mail this to you for promptness and will also express mail an original signed copy. I will call you to make sure you have received this.

Thank you for your assistance with this matter.

Sincerely,

Rufus Bastian



.Paraquat CSF 0708240001.pdf

MANUFACTURING PROCESS INFORMATION IS NOT INCLUDED

1.62



ZAPHawk@aol.com
04/25/2007 11:08 PM

To Hope Johnson/DC/USEPA/US@EPA
cc basket@worldnet.att.net
bcc
Subject Paraquat Concentrate Data Matrix

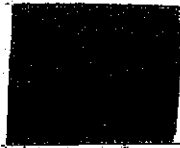
Dear Ms. Johnson,

Please find the data matrix for Source Dynamics Paraquat Concentrate attached, as we discussed. Once again, thank you for your patient help.

Bob Hawk
Consultant, Source Dynamics

See what's free at AOL.com. Paraquat Data Matrix.pdf

CONTENT FROM THIS NOTIFICATION IS NOT INCLUDED



8/23

called to ask for
new CSF w/ record
books

1/23



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

April 18, 2007

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

SOURCE DYNAMICS, LLC
10039 E. TROON NORTH DRIVE
SCOTTSDALE, AZ 85262-

Report of Analysis for Compliance with PR Notice 86-5

Thank you for your submittal of 17-APR-07. Our staff has completed a preliminary analysis of the material. The results are provided as follows:

Your submittal was found to be in full compliance with the standards for submission of data contained in PR Notice 86-5. A copy of your bibliography is enclosed, annotated with Master Record ID's (MRIDs) assigned to each document submitted. Please use these numbers in all future references to these documents. Thank you for your cooperation. If you have any questions concerning this data submission, please raise them with the cognizant Product Manager, to whom the data have been released.

188

Receipt for Section 3

S: 808778

Regulatory Type: Product Registration Section 3

Application Type: New Registration

Company: B2542 SOURCE DYNAMICS, LLC

Risk Manager: Registration Division Risk Management Team 25

Product #: B2542-G Product Name: PARAQUAT CONCENTRATE

Override#:

Me Too Section 3: B2557-1 Me Too Product Name: PARAQUAT SL HERBICIDE

Application Date: 17-Apr-2007 OPP Rec'd Date: 17-Apr-2007

Front-End Date: 17-Apr-2007 Risk Manager Send Date: 17-Apr-2007

FFS Due Date: Negotiated Due Date:

OPP Target Date:

Fast Track: New Ingredient:

Receipt Description: resubmission following 86-5 rejection

Form A: Signature Date: Form B: Signature Date:

Resubmission: Yes No

Fee For Service: Yes No

Billable: Yes No

Print Letter

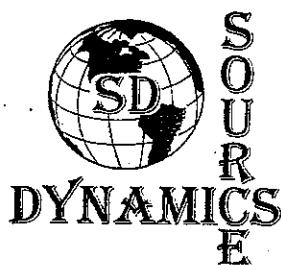
Enter More Information

Tracking

Receipt Content: Study

New Ingredient Request Date:

New Ingredient Received Date:



March 24, 2007

Document Processing Desk (APPL)
Office of Pesticide Programs (P7504C)
Environmental Protection Agency
Room S-4900, One Potomac Yard (South Building)
2777 S. Crystal Drive
Arlington, VA 22202

Attn: James Tompkins (PM 25), Registration Division

Dear Mr. Tompkins:

Subject: Paraquat Concentrate: Registration Application

Source Dynamics LLC wishes to apply for the registration of Paraquat Concentrate. This product is substantially similar to registered products. In support of this application we have enclosed the following:

Application for Pesticide Registration (8570-1)
Confidential Statement of Formula (8570-27)
Certification with Respect to Citation of Data (8570-34)
Data Matrix (8570-35)
Proposed label (6 copies)
Data Transmittal Document
Supporting studies (3 copies each)

We have concluded that this regulatory action falls in PRIA Category R31, for which a fee of \$4,200 is required. If the Agency concurs, please contact me at the e-mail address below.

Thank you for your consideration of this project. Please contact me if you have any questions.

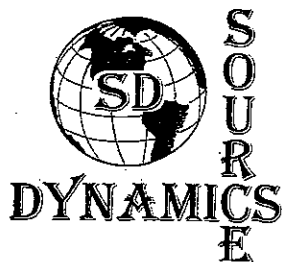
Sincerely,

Rufus Bastian, President
Source Dynamics LLC
baskel@worldnet.att.net

10039 E. Troon North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

166
Fax 480.502.9268



DATA TRANSMITTAL DOCUMENT

Name and Address of Submitter

Source Dynamics LLC
10039 E. Troon North Drive
Scottsdale, AZ 85262

Regulatory Action in Support of Which This Package is Submitted

Application for Pesticide Registration
Paraquat Concentrate, EPA File Symbol 82542-x

Transmittal Date

March 24, 2007

List of Submitted Studies (3 Copies of Each)

- 47106701** S. Garofani, "Paraquat Technical: Validation of the Analytical Method for the Determination of the Active Ingredient Content," ChemService Study No. CH-116-2006 (December 11, 2006), 38 pages, Guideline 830.1800.
- 47091102** S. Garofani, "Paraquat Technical: Validation of the Analytical Method for the Determination of the Content of 4,4'-Bipyridyl as a Significant Impurity," ChemService Study No. CH-117-2006 (December 11, 2006), 40 pages, Guideline 830.1800.
- 47091103** S. Garofani, "Paraquat Technical: Validation of the Analytical Method for the Determination of the Content of Terpyridines as Relevant Impurities," ChemService Study No. CH-118-2006 (December 11, 2006), 41 pages, Guideline 830.1800.
- 47106702** S. Garofani, "Paraquat Technical: Complete Analysis of Five Batch Samples," ChemService Study No. CH-119-2006 (December 11, 2006), 70 pages, Guideline 830.1700.
- 47091105** C. Wo, "Paraquat 43.8% Tech: Physical and Chemical Characteristics: Color, Physical State, Odor, pH, Viscosity and Density/Relative Density," Eurofins Laboratory Study Number 21076 (March 14, 2007), 15 pages, Guidelines 830.6302, 830.6303, 830.6304, 830.7000, 830.7100 and 830.7300.
- 47091106** C.-P. Tsou, "Paraquat Concentrate: Product Identity, Description of Materials, Manufacturing Process and Discussion of Impurities," Kuo Ching Report No. C070102 (January 30, 2007), 74 pages, Guidelines 830.1550, 830.1600, 830.1620 and 830.1670.
- 47091107** J. Durando, "Paraquat 43.8% Tech: Acute Oral Up and Down Procedure in Rats," Eurofins Laboratory Study Number 21077 (March 15, 2007), 15 pages, Guideline 870.1100.
- 47091108** C. Lowe, "Paraquat 43.8% Tech: Acute Dermal Toxicity in Rats - Limit Test," Eurofins Laboratory Study Number 21078 (February 20, 2007), 14 pages, Guideline 870.1200.
- 47091109** C. Lowe, "Paraquat 43.8% Tech: Acute Inhalation Study in Rats - Limit Test," Eurofins Laboratory Study Number 21079 (March 14, 2007), 23 pages, Guideline 870.1300.

page 1 of 2

10039 E. Troon North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

167
Fax 480.502.9268



47091110

C. Lowe, "Paraquat 43.8% Tech: Primary Skin Irritation Study in Rabbits," Eurofins Laboratory Study Number 21081 (February 20, 2007), 16 pages, Guideline 870.2500.

47091111

C. Lowe, "Paraquat 43.8% Tech: Dermal Sensitization Study in Guinea Pig (Buehler Method)," Eurofins Laboratory Study Number 21082 (February 12, 2007), 20 pages, Guideline 870.2600.

Company Official:
Company Name:
Company Contact:

Rufus Bastian Signature:
Source Dynamics LLC
Rufus Bastian, President
baskel@worldnet.att.net
telephone (480) 502-9289

page 2 of 2


10039 E. Troon North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

868
Fax 480.502.9268



Hope
Johnson/DC/USEPA/US
04/16/2007 09:17 AM

To ZAPHawk@aol.com, baskel@worldnet.att.net
cc Jim Tompkins/DC/USEPA/US@EPA
bcc
Subject Re: Paraquat Concentrate Replacement Pages; 82542-G
pending application 

Mr. Hawk and Mr. Bastian:

I received the new pages you attached below, however, the text is still illegible, and therefore the pages will most likely be rejected again from compliance with PR Notice 86-5. Is there any way you can get new, distinct copies of the pages in question? If the 86-5 deficiencies cannot be corrected, I will have to send a 75-day deficiency letter to you regarding this pending application. Additionally, the PRIA due date will most likely need to be revised due to the delay in sending the studies for review. Please notify me as soon as possible as to your intended action.

Thank you,

Hope A. Johnson
U.S. Environmental Protection Agency
Office of Pesticide Programs
Registration Division
Herbicide Branch
Phone: 703-305-5410
Mail Code 7505P
ZAPHawk@aol.com



ZAPHawk@aol.com
04/12/2007 08:59 PM

To Hope Johnson/DC/USEPA/US@EPA
cc baskel@worldnet.att.net
Subject Re: Paraquat Concentrate: Replacement Pages

Dear Ms. Johnson,

I am pleased to attach the two replacement pages here. The Certificate of Analysis was obtained from the manufacturer, Sigma Aldrich. These are not identical to the original pages, which contained a certification of Lot No. 12595 dated April 26, 1996. Aldrich subsequently recertified this lot of material on April 30, 2006, and the newer certification is given here.

Again, we apologize for the inconvenience and thank you for your patience.

Kind regards.

Bob Hawk

In a message dated 4/10/2007 6:19:46 AM US Mountain Standard Time,
Johnson.Hope@epamail.epa.gov writes:
Mr. Hawk,

Could you please send me information on expected date of arrival of the replacement pages from the Italian Laboratory?

Thank you,

Hope A. Johnson
U.S. Environmental Protection Agency
Office of Pesticide Programs
Registration Division
Herbicide Branch
Phone: 703-305-5410
Mail Code 7505P

ZAPHawk@aol.com

04/05/2007 09:03
PM

To
Hope Johnson/DC/USEPA/US@EPA

cc
baskel@worldnet.att.net
Subject

Paraquat Concentrate:
Replacement Pages

Dear Ms. Johnson:

Rufus Bastian has asked me to send you replacement pages from two reports: page 29 of Report CH - 116/2006 and page 49 of Report CH - 119/2006. They are in fact identical pages: a Certificate of Analysis of p-toluic acid from Sigma Aldrich. The attached high-resolution PDF pages made from our original reports are still, I am sorry to say, not very good. I am requesting replacement pages from the laboratory in Italy in case these are still not acceptable.

We apologize for this difficulty. If these pages are not acceptable, we would be grateful for a little more time to rectify the situation.

Thanks and kind regards.

Bob Hawk
Consultant, Source Dynamics LLC

See what's free at AOL.com. (See attached file: Paraquat Replacement.pdf)

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

March 30, 2007

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

SOURCE DYNAMICS, LLC
10039 E. TROON NORTH DRIVE
SCOTTSDALE, AZ 85262-

Report of Analysis for Compliance with PR Notice 86-5

Thank you for your submittal of 27-MAR-07. Our staff has completed a preliminary analysis of the material. The results are provided as follows:

Your data submittal was found to be partially in compliance with the standards for submission of data contained in PR Notice 86-5, with the exceptions noted below. A copy of your transmittal bibliography is enclosed, annotated with the Master Record ID's (MRIDs) assigned to each document accepted. Please use these numbers in all future references to these documents.

If deficiencies were found which apply to individual accepted studies, they are listed below following the applicable MRID. Any document which has been assigned a MRID has been accepted under PR Notice 86-5. If any comments related to a MRID appear on this report, they are provided for your information and reference when preparing future submissions. Some individual documents were not acceptable, and all copies are being returned to you for correction for the reasons indicated below.

These rejected studies have been assigned separate identification numbers which are annotated on both the enclosed bibliography and the rejected document labels.

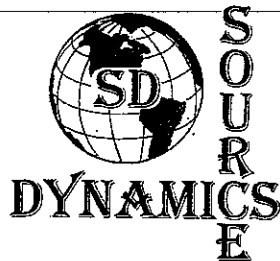
The rejected studies and their deficiencies are described below.

Rejected Study [01]:

* The following page(s) in this study is/are illegible due to the poor quality of the photocopying: 29.

Rejected Study [04]:

* The following page(s) in this study is/are illegible due to the poor quality of the photocopying: 49.



March 24, 2007

Document Processing Desk (APPL)
Office of Pesticide Programs (P7504C)
Environmental Protection Agency
Room S-4900, One Potomac Yard (South Building)
2777 S. Crystal Drive
Arlington, VA 22202

Attn: James Tompkins (PM 25), Registration Division

Dear Mr. Tompkins:

Subject: Paraquat Concentrate: Registration Application

Source Dynamics LLC wishes to apply for the registration of Paraquat Concentrate. This product is substantially similar to registered products. In support of this application we have enclosed the following:

Application for Pesticide Registration (8570-1)
Confidential Statement of Formula (8570-27)
Certification with Respect to Citation of Data (8570-34)
Data Matrix (8570-35)
Proposed label (6 copies)
Data Transmittal Document
Supporting studies (3 copies each)

We have concluded that this regulatory action falls in PRIA Category R31, for which a fee of \$4,200 is required. If the Agency concurs, please contact me at the e-mail address below.

Thank you for your consideration of this project. Please contact me if you have any questions.

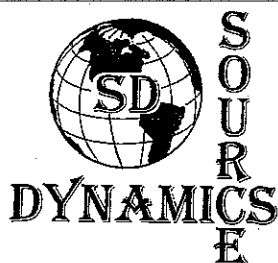
Sincerely,

Rufus Bastian, President
Source Dynamics LLC
baskel@worldnet.att.net

10039 E. Troon North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

172
Fax 480.502.9268



DATA TRANSMITTAL DOCUMENT

Name and Address of Submitter

Source Dynamics LLC
10039 E. Troon North Drive
Scottsdale, AZ 85262

Regulatory Action in Support of Which This Package is Submitted

Application for Pesticide Registration
Paraquat Concentrate, EPA File Symbol 82542-x

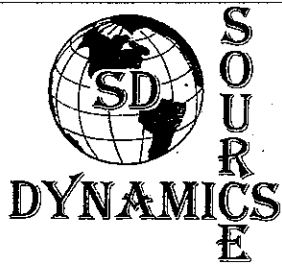
Transmittal Date

March 24, 2007

List of Submitted Studies (3 Copies of Each)

- Reject (01)** S. Garofani, "Paraquat Technical: Validation of the Analytical Method for the Determination of the Active Ingredient Content," ChemService Study No. CH-116-2006 (December 11, 2006), 38 pages, Guideline 830.1800.
- 47091102** S. Garofani, "Paraquat Technical: Validation of the Analytical Method for the Determination of the Content of 4,4'-Bipyridyl as a Significant Impurity," ChemService Study No. CH-117-2006 (December 11, 2006), 40 pages, Guideline 830.1800.
- 47091103** S. Garofani, "Paraquat Technical: Validation of the Analytical Method for the Determination of the Content of Terpyridines as Relevant Impurities," ChemService Study No. CH-118-2006 (December 11, 2006), 41 pages, Guideline 830.1800.
- Reject (04)** S. Garofani, "Paraquat Technical: Complete Analysis of Five Batch Samples," ChemService Study No. CH-119-2006 (December 11, 2006), 70 pages, Guideline 830.1700.
- 47091105** C. Wo, "Paraquat 43.8% Tech: Physical and Chemical Characteristics: Color, Physical State, Odor, pH, Viscosity and Density/Relative Density," Eurofins Laboratory Study Number 21076 (March 14, 2007), 15 pages, Guidelines 830.6302, 830.6303, 830.6304, 830.7000, 830.7100 and 830.7300.
- 47091106** C.-P. Tsou, "Paraquat Concentrate: Product Identity, Description of Materials, Manufacturing Process and Discussion of Impurities," Kuo Ching Report No. C070102 (January 30, 2007), 74 pages, Guidelines 830.1550, 830.1600, 830.1620 and 830.1670.
- 47091107** J. Durando, "Paraquat 43.8% Tech: Acute Oral Up and Down Procedure in Rats," Eurofins Laboratory Study Number 21077 (March 15, 2007), 15 pages, Guideline 870.1100.
- 47091108** C. Lowe, "Paraquat 43.8% Tech: Acute Dermal Toxicity in Rats - Limit Test," Eurofins Laboratory Study Number 21078 (February 20, 2007), 14 pages, Guideline 870.1200.
- 47091109** C. Lowe, "Paraquat 43.8% Tech: Acute Inhalation Study in Rats - Limit Test," Eurofins Laboratory Study Number 21079 (March 14, 2007), 23 pages, Guideline 870.1300.

173



47091110

C. Lowe, "Paraquat 43.8% Tech: Primary Skin Irritation Study in Rabbits," Eurofins Laboratory Study Number 21081 (February 20, 2007), 16 pages, Guideline 870.2500.

47091111

C. Lowe, "Paraquat 43.8% Tech: Dermal Sensitization Study in Guinea Pigs (Buehler Method)," Eurofins Laboratory Study Number 21082 (February 12, 2007), 20 pages, Guideline 870.2600.

Company Official:
Company Name:
Company Contact:

Rufus Bastian Signature:
Source Dynamics LLC
Rufus Bastian, President
baskel@worldnet.att.net
telephone (480) 502-9289

page 2 of 2

10039 E. Troon North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

179
Fax 480.502.9268



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

April 2, 2007

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

PLEASE RETURN A COPY OF THIS LETTER WITH PAYMENT
Or Pay On-Line at www.Pay.Gov (See Below for Details)

OPP Decision Number: D-377428
EPA File Symbol or Registration Number: 82542-G
Product Name: PARAQUAT CONCENTRATE
EPA Receipt Date: 27-Mar-2007
EPA Company Number: 82542
Company Name: SOURCE DYNAMICS, LLC

RUFUS BASTIAN
SOURCE DYNAMICS, LLC
10039 E. TROON NORTH DRIVE
SCOTTSDALE, AZ 85262-

SUBJECT: Receipt of Registration Application Subject to Registration Service Fee

Dear Registrant:

The Office of Pesticide Programs has received your application for registration. If you submitted data with this application, the results of the PRN-86-5 screen will be communicated separately. During the administrative screen, the Office of Pesticide Programs has determined that this Action is subject to a Pesticide Registration Service Fee as defined in the Pesticide Registration Improvement Act.

The Action has been identified as Action Code: R31

NEW PRODUCT;NON-FAST TRACK (INCLUDES REVIEWS OF PRODUCT
CHEMISTRY;ACUTE TOXICITY;PUBLIC HEALTH PEST EFFICACY);

Please remit payment in the amount of: \$ 4,200 to:

By USPS:
USEPA Washington Finance Center
Pesticide Registration Service Fee
PO Box 360277
Pittsburgh, PA 15251

175

By Courier:

U.S. EPA Washington Finance Center
Pesticide Registration Service Fee
C/O Mellon Client Service Center
500 Ross Street, Room 670
Box 360277
Pittsburgh, PA 15251-6277
Attn: EPA Module Supervisor
Telephone: (412) 236-2294

All payments must be in United States currency by check, bank draft, or money order drawn to the order of the Environmental Protection Agency. To ensure proper credit, please write the OPP DECISION NUMBER on your check, and enclose a copy of this letter with your payment.

Effective November 1, 2006, fees may be paid on-line via credit card or electronic fund transfer. To submit a payment on-line, visit www.pay.gov. From the pay.gov home page, select "search by form name." From the next page, select "P," then click on "Pesticide Registration Improvement Act. Fee Payment" and complete the form, making certain to use the decision number and registration number on the invoice you receive from the Pesticide Program in the space provided.

You may be eligible for a full or partial waiver of the registration service fee if, for example, you qualify as a small business or are applying for a minor use, or if your application is solely associated with an IR-4 tolerance petition. Please be advised that if you intend to request a waiver, you must do so in writing within 15 days of receipt of this invoice instead of remitting the amount indicated above. OPP will not consider waiver requests after the registration service fee has been paid. Information regarding eligibility and how to request and document a fee waiver is available on the OPP Fee for Service web site at www.epa.gov/pesticides/fees.

Please send Registration Service Fee Waiver requests to:

By USPS:

Document Processing Desk (WAIVER)
Office of Pesticide Programs (7504C)
U.S. Environmental Protection Agency
1200 Pennsylvania Ave NW
Washington, DC 20460

By Courier:

Document Processing Desk (WAIVER)
Office of Pesticide Programs (7504C)
U.S. Environmental Protection Agency
Room S4900 Potomac Yard 1
2777 S. Crystal Dr.
Arlington, VA 22202

A PRIA decision time review period will not start until a fee waiver is granted and/or the Agency receives certification that the outstanding fee has been paid. If the Agency does not receive certification of payment for this action or a fee waiver request within the next 45 days, the Agency will presume that you no longer want to pursue this action. The Agency will then initiate a process that may result in administrative withdrawal of this action.

If you have any questions, please contact the Pesticide Registration Service Fee

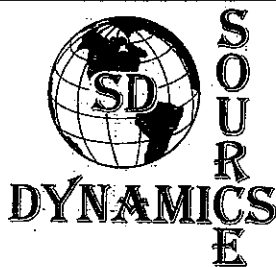
76

Sincerely,

Teresa Downs

Front End Processing Staff

Information Technology & Resources Management Division



March 24, 2007

Document Processing Desk (APPL)
Office of Pesticide Programs (P7504C)
Environmental Protection Agency
Room S-4900, One Potomac Yard (South Building)
2777 S. Crystal Drive
Arlington, VA 22202

Attn: James Tompkins (PM 25), Registration Division

Dear Mr. Tompkins:

Subject: Paraquat Concentrate: Registration Application

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Certification with Respect to Citation of Data (8570-34)
Data Matrix (8570-35)
Proposed label (6 copies)
Data Transmittal Document
Supporting studies (3 copies each)

We have concluded that this regulatory action falls in PRIA Category R31, for which a fee of \$4,200 is required. If the Agency concurs, please contact me at the e-mail address below.

Thank you for your consideration of this project. Please contact me if you have any questions.

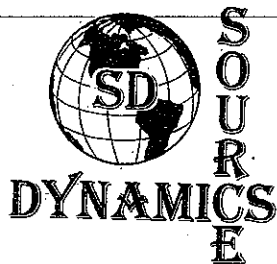
Sincerely,

Rufus Bastian, President
Source Dynamics LLC
baskel@worldnet.att.net

10039 E. Troon North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

178
Fax 480.502.9268



DATA TRANSMITTAL DOCUMENT

Name and Address of Submitter

Source Dynamics LLC
10039 E. Troon North Drive
Scottsdale, AZ 85262

Regulatory Action in Support of Which This Package is Submitted

Application for Pesticide Registration
Paraquat Concentrate, EPA File Symbol 82542-x

Transmittal Date

March 24, 2007

List of Submitted Studies (3 Copies of Each)

S. Garofani, "Paraquat Technical: Validation of the Analytical Method for the Determination of the Active Ingredient Content," ChemService Study No. CH-116-2006 (December 11, 2006), 38 pages, Guideline 830.1800.

S. Garofani, "Paraquat Technical: Validation of the Analytical Method for the Determination of the Content of 4,4'-Bipyridyl as a Significant Impurity," ChemService Study No. CH-117-2006 (December 11, 2006), 40 pages, Guideline 830.1800.

S. Garofani, "Paraquat Technical: Validation of the Analytical Method for the Determination of the Content of Terpyridines as Relevant Impurities," ChemService Study No. CH-118-2006 (December 11, 2006), 41 pages, Guideline 830.1800.

S. Garofani, "Paraquat Technical: Complete Analysis of Five Batch Samples," ChemService Study No. CH-119-2006 (December 11, 2006), 70 pages, Guideline 830.1700.

C. Wo, "Paraquat 43.8% Tech: Physical and Chemical Characteristics: Color, Physical State, Odor, pH, Viscosity and Density/Relative Density," Eurofins Laboratory Study Number 21076 (March 14, 2007), 15 pages, Guidelines 830.6302, 830.6303, 830.6304, 830.7000, 830.7100 and 830.7300.

C.-P. Tsou, "Paraquat Concentrate: Product Identity, Description of Materials, Manufacturing Process and Discussion of Impurities," Kuo Ching Report No. C070102 (January 30, 2007), 74 pages, Guidelines 830.1550, 830.1600, 830.1620 and 830.1670.

J. Durando, "Paraquat 43.8% Tech: Acute Oral Up and Down Procedure in Rats," Eurofins Laboratory Study Number 21077 (March 15, 2007), 15 pages, Guideline 870.1100.

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C. Lowe, "Paraquat 43.8% Tech: Acute Inhalation Study in Rats – Limit Test," Eurofins Laboratory Study Number 21079 (March 14, 2007), 23 pages, Guideline 870.1300.

page 1 of 2

10039 E. Troon North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

179
Fax 480.502.9268



C. Lowe, "Paraquat 43.8% Tech: Primary Skin Irritation Study in Rabbits, Eurofins Laboratory Study Number 21081 (February 20, 2007), 16 pages, Guideline 870.2500.

C. Lowe, "Paraquat 43.8% Tech: Dermal Sensitization Study in Guinea Pigs (Buehler Method)," Eurofins Laboratory Study Number 21082 (February 12, 2007), 23 pages, Guideline 870.2600.

Company Official:
Company Name:
Company Contact:

Rufus Bastian Signature:
Source Dynamics LLC
Rufus Bastian, President
baskel@worldnet.att.net
telephone (480) 502-9289

page 2 of 2

10039 E. Troon North Drive
Scottsdale, AZ 85262

Tel. 480.502.9289

180
Fax 480.502.9268

Paperwork Reduction Act Notice: The public reporting burden for this collection of information is estimated to average 0.25 hours per response for registration activities and 0.25 hours per response for registration and special review activities, including time for reviewing the instructions and completing the necessary forms. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Director, OPPI Information Management Division (2137), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, DC 20460. Do not send the firm to this address.

DATA MATRIX

Date: April 25, 2017	EPA Reg No./Firm Symbol: 82542	Page 1 of 2
Applicant's/Registrant's Name & Address: Source Dynamics LLC 10039 E. Troon North Drive, Scottsdale, AZ 85262		
Product: Parquet Concentrate		

Ingredient: Parquet				EPA Reg No./Firm Symbol: 82542		Page 1 of 2
Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Notes	
830.1550	Product identification and disclosure of ingredients	47091105	Source Dynamics LLC	OWN		
830.1600	description of beginning materials	47091105	Source Dynamics LLC	OWN		
830.1620	description of manufacturing process	47091105	Source Dynamics LLC	OWN		
830.1670	discussion of formation of impurities	47091105	Source Dynamics LLC	OWN		
830.1700	preliminary analysis	47108702	Source Dynamics LLC	OWN		
830.1750	certification of limits	47108702	Source Dynamics LLC	OWN	see also 8579.4	
830.1800	enforcement analytical method	47108701	Source Dynamics LLC	OWN		
		47091102	Source Dynamics LLC	OWN		
		47091103	Source Dynamics LLC	OWN		
		47108702	Source Dynamics LLC	OWN		
830.6302	color	47091105	Source Dynamics LLC	OWN		
830.6303	physical state	47091105	Source Dynamics LLC	OWN		
830.6304	odor	47091105	Source Dynamics LLC	OWN		
830.6317	storage stability	48098802	Simon	PAY	Source Dynamics study in progress	
Signature: <i>Rufus Bastian</i>			Name and Title: <i>Rufus Bastian</i>			Date: <i>4/25/17</i>
			President			

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DATA MATRIX

Date: April 25, 2017		EPA Reg No./File Symbol: 82542-		Page 2 of 2	
Applicant's/Registrant's Name & Address Source Dynamics LLC 10039 E. Troon North Drive, Scottsdale AZ 85262		Product Paraquat Concentrate			
Ingredient: paraquat					
Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
830.8320	corrosion characteristics	44580901	Syngenta	OWN	Source Dynamic study in progress
830.7000	pH	47091105	Source Dynamics LLC	OWN	
830.7100	viscosity	47091105	Source Dynamics LLC	OWN	
830.7300	density/relative density	47091105	Source Dynamics LLC	OWN	
870.1100	acute oral toxicity	47091107	Source Dynamics LLC	OWN	
870.1200	acute dermal toxicity	47091108	Source Dynamics LLC	OWN	
870.1300	acute inhalation toxicity	47091109	Source Dynamics LLC	OWN	
870.2400	acute eye irritation	46098805	Shion	PAY	
		44702809	Griffin	PAY	
870.2500	acute dermal irritation	47091110	Source Dynamics LLC	OWN	
870.2600	skin sensitization	47091111	Source Dynamics LLC	OWN	
Signature: <i>Rafael Bastian</i>			Name and Title: <i>Rafael Bastian</i> <i>President</i>		Date: <i>4/25/07</i>



United States
Environmental Protection Agency
Washington, DC 20460

☒ Registration
☐ Amendment
☐ Other

OPP Identifier Number

621

Application for Pesticide - Section I

1. Company/Product Number 82542-B	2. EPA Product Manager J. TOMPKINS	3. Proposed Classification <input type="checkbox"/> None <input checked="" type="checkbox"/> Restrict
4. Company/Product (Name) PARAQUAT CONCENTRATE	PM# 25	
5. Name and Address of Applicant (Include ZIP Code) SOURCE DYNAMICS LLC 10039 E. TROON NORTH DRIVE SCOTTSDALE, AZ 85262 <input type="checkbox"/> Check if this is a new address	6. Expedited Review. In accordance with FIFRA Section 3(c)(3)(b)(i), my product is similar or identical in composition and labeling to: EPA Reg. No. 82557-1 Product Name PARAQUAT SL HERBICIDE	

Section - II

<input type="checkbox"/> Amendment - Explain below.	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____
<input type="checkbox"/> Resubmission in response to Agency letter dated _____	<input type="checkbox"/> "Me Too" Application.
<input type="checkbox"/> Notification - Explain below.	<input checked="" type="checkbox"/> Other - Explain below.

Explanation: Use additional page(s) if necessary. (For section I and Section II.)

NEW PRODUCT REGISTRATION APPLICATION

Section - III

1. Material This Product Will Be Packaged In:			
Child-Resistant Packaging <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Unit Packaging <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Water Soluble Packaging <input type="checkbox"/> Yes <input checked="" type="checkbox"/> Text No	2. Type of Container <input checked="" type="checkbox"/> Metal <input type="checkbox"/> Plastic <input type="checkbox"/> Glass <input type="checkbox"/> Paper <input type="checkbox"/> Other (Specify) _____
* Certification must be submitted		If "Yes" Unit Packaging wgt. No. per container	If "Yes" Package wgt. No. per container
3. Location of Net Contents Information <input type="checkbox"/> Label <input checked="" type="checkbox"/> Container		4. Size(s) Retail Container 2.5 GALLON	5. Location of Label Directions <input type="checkbox"/> On Label <input checked="" type="checkbox"/> On Labeling accompanying product
6. Manner in Which Label is Affixed to Product PLASTIC SLEEVE		<input type="checkbox"/> Lithograph <input type="checkbox"/> Paper glued <input type="checkbox"/> Stenciled <input checked="" type="checkbox"/> Other SLEEVE	

Section - IV

1. Contact Point [Complete items directly below for identification of individual to be contacted, if necessary, to process this application.]			
Name RUFUS BASTIAN		Title PRESIDENT	Telephone No. (Include Area Code) 480-502-9289
Certification I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.			6. Date Application Received (Stamped)
2. Signature 		3. Title PRESIDENT	
4. Typed Name RUFUS BASTIAN		5. Date 2/26/07	

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Restricted Use Pesticide due to acute toxicity. For retail sale to and use only by certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator's certification.

PARAQUAT CONCENTRATE

Defoliant and desiccant herbicide for the control of weeds and grasses and as a harvest aid.

NEVER PUT INTO FOOD, DRINK OR OTHER CONTAINERS.
IF SWALLOWED, TAKE IMMEDIATE ACTION AS PRESCRIBED IN FIRST AID.
SYMPTOMS ARE PROLONGED AND PAINFUL.
DO NOT USE OR STORE IN OR AROUND THE HOME.
DO NOT REMOVE CONTENTS EXCEPT FOR IMMEDIATE USE.
THE ODOR OF THIS PRODUCT IS FROM THE STENCHING AGENT WHICH HAS BEEN ADDED, NOT FROM PARAQUAT.

NET CONTENTS: _____

Active Ingredient:

paraquat dichloride (1,1'-dimethyl-4,4'-bipyridinium dichloride)	43.2%
Other Ingredients:	56.8%
Total:	100.0%

Contains 3.0 pounds paraquat cation per gallon as 4.14 pounds of dichloride salt per gallon. Contains emetic.

KEEP OUT OF REACH OF CHILDREN

DANGER/PELIGRO

POISON

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand the label, find someone to explain it to you in detail.)

EPA Reg. No. 82542-x
EPA Est. No.
Product of Taiwan

Source Dynamics, LLC
10039 E. Troon North Drive
Scottsdale, AZ 85262

FIRST AID Contains Paraquat, a Bipyrдинium Herbicide Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

If swallowed	<ul style="list-style-type: none"> • Call a poison control center or doctor IMMEDIATELY for treatment advice. • SPEED IS ESSENTIAL. Immediate medical attention is required. If available, give an absorbent such as activated charcoal, bentonite or Fuller's Earth. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to by a poison control center or doctor. • Do not give anything by mouth to an unconscious person.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • The odor of this product is from the stenching agent, which has been added, not from the paraquat. • If person is not breathing, call 911 or an ambulance. • Call a poison control center or doctor for treatment advice.
If in eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15-20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for treatment advice.

NOTE TO PHYSICIAN Administer either activated charcoal (100g for adults or 2g/kg body weight in children) or Fuller's Earth (15% solution; 1 liter for adults or 15ml/kg body weight in children). NOTE: The use of gastric lavage without administration of an absorbent has not shown any clinical benefit. Do not use supplemental oxygen. Eye splashes from concentrated material should be treated by an eye specialist after initial treatment. With the possibility of late onset corneal ulceration, it is advised that patients with paraquat eye injuries are reviewed by an eye specialist the day after first presentation. Use treatment that is appropriate for chemical burns. Intact skin is an effective barrier to paraquat; however, contact with irritated or cut skin or repeated contact with intact skin may result in poisoning.

HOT LINE NUMBERS:

SAFETY DATA AND INFORMATION 203-573-3303
TRANSPORTATION EMERGENCY (CHEMTREC) 800-424-9300

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PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER. May be fatal if swallowed. Fatal if inhaled. Do not breathe spray mist. Wear a dust mist respirator. Causes irreversible eye damage. Wear protective eyewear. Do not get in eyes or on clothing. Harmful if absorbed through skin. Avoid contact with skin. Prolonged or frequently repeated contact may cause allergic reactions in some individuals.

IMPORTANT: Inhalation is an unlikely route of exposure due to low vapor pressure and large spray droplet size, but mucosal irritation or nose bleeds may occur. Prolonged contact with this concentrated product can irritate your skin.

Personal Protective Equipment (PPE) Applicators and other handlers (other than mixers and loaders) must wear:

Long-sleeved shirt and long pants; Chemical resistant gloves – Category A (e.g., barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC) or viton); Shoes plus socks; Protective eyewear; A dust mist NIOSH-approved respirator with any N, R, P, or HE filter.

Mixers and loaders must wear:

Long-sleeved shirt and long pants; Chemical resistant gloves – Category A (e.g., barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC) or viton); Shoes plus socks; Dust mist NIOSH-approved respirator with any N, R, P, or HE filter; Chemical resistant apron; Face shield.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Controls: When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, and chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is **toxic to wildlife**. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters.

Paraquat dichloride is **toxic to nontarget crops and plants** if off-target movement occurs because it desiccates all green plant tissue. Extreme care must be taken to ensure that off-target drift is minimized to the greatest extent possible. Refer to the local state laws, regulations, guidelines, and spray drift information contained in the Directions for Use section for proper application to avoid off-target movement. Do not apply under conditions involving possible drift to food, forage, or other plantings that might be damaged or the crops thereof rendered unfit for sale, use, or consumption. Do not apply when weather conditions favor drift from treated areas. To avoid drift, do not make aerial application during periods of thermal inversion.

PHYSICAL AND CHEMICAL HAZARDS

This product is **mildly corrosive to aluminum** and produces hydrogen gas which may form a highly combustible gas mixture. Do not mix or store in containers, spray tanks, nurse tanks, or such systems made of aluminum or having aluminum fittings. The product is compatible with high density polyethylene and rubber-lined steel containers.

DIRECTIONS FOR USE

Restricted Use Pesticide. It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation. Do not use around home gardens, schools, recreational parks, golf courses or playgrounds.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to use of this product that are covered by the Worker Protection Standard.

For preplant or preemergence (broadcast or banded), chemical fallow, postemergence directed spray applications, early postemergence broadcast in peanuts and dormant season applications, and "between cutting" applications in alfalfa: Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 12 hours.

For harvest aid and desiccation application: Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

Coveralls

Shoes plus socks
Protective eyewear
Chemical resistant gloves - Category A (e.g., barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC) or viton).

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

DO NOT enter or allow others to enter the treated area until sprays have dried.

AVOID working in spray mist.

Keep all unprotected persons out of operating areas or vicinity where there may be danger of drift.

Certain states may require more restrictive reentry intervals; consult your State Department of Agriculture for further information.

GENERAL INSTRUCTIONS AND INFORMATION

Do not apply this product through any type of irrigation system.

When **PARAQUAT CONCENTRATE** is applied at less than 10 gallons per acre finished spray volume, a drift control or spray deposition additive **SHOULD** be used. Refer to the additive label for rates of applications, directions for use, limitations, and restrictions.

SPRAY DRIFT INFORMATION

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

The following **DRIFT MANAGEMENT REQUIREMENTS** must be followed to avoid off-target drift movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed $\frac{3}{4}$ the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45°. Where states have more stringent regulations, they shall be observed.

The applicator should be familiar with and take into account the information covered in the Aerial Drift Reduction Advisory Information.

AERIAL DRIFT REDUCTION ADVISORY INFORMATION

Information on Droplet Size

The most effective way to reduce drift potential is to apply large droplets. The best management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environment conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

Controlling Droplet Size

- **Volume** - Use high flow rate nozzles to apply the highest spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that provide uniform coverage.
- **Nozzle Orientation** - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

Boom Length

For some use patterns, reducing the effective boom length to less than 3/4 of the wingspan or rotor length may further reduce drift without reducing swath width.

Application Height

Applications should not be made at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making application at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

Swath Adjustment

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.).

Wind

Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. **NOTE:** Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

Temperature and Humidity

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

Temperature Inversions

Applications should not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

Sensitive Areas

The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g., when wind is blowing away from the sensitive areas).

GENERAL INFORMATION

PARAQUAT CONCENTRATE is a liquid formulation containing 3 lbs. of active ingredient per gallon. It contains a nontoxic odor to help prevent accidental ingestions. It also contains an emetic (an agent which will induce vomiting if the product is swallowed).

APPLICATION

PARAQUAT CONCENTRATE is a contact herbicide for control or suppression of a broad spectrum of emerged weeds including most small annual broadleaf and grass weeds. It can also be used to suppress perennial weeds by destroying green foliage and as a desiccant/ defoliant at harvest.

Complete coverage of target weeds is necessary to get good control because PARAQUAT CONCENTRATE is a contact-type herbicide. It is also necessary to obtain complete coverage for good crop desiccation and defoliations. Undesirable weed control and undesirable crop desiccation/defoliation will result if improper application technique and/or application to large, stressed, or mown weeds are made. Refer to the following details for specific application instructions.

Thorough coverage of all green foliage is required for efficacious weed control and crop defoliation and desiccation because PARAQUAT CONCENTRATE requires actively growing green plant tissue to function. Drought-stressed weeds, weeds with little green foliage (i.e., mowed or cut weeds), or mature woody bark of trees and vines are unaffected by application with PARAQUAT CONCENTRATE.

There is no residual soil activity to affect later-planted crops or later germinating weeds because clay and organic matter rapidly tie up PARAQUAT CONCENTRATE.

ROTATIONAL CROPS

After the last application PARAQUAT CONCENTRATE, all rotational crops may be planted immediately.

RAINFASTNESS

Rain occurring 30 minutes or more after application will have no effect on the activity of PARAQUAT CONCENTRATE because it is rapidly absorbed by the weed foliage.

USE OF A NONIONIC SURFACTANT OR CROP OIL CONCENTRATE

The following should always be added and be used at the recommended rates or there will be a reduction in efficacy of PARAQUAT CONCENTRATE.

Nonionic Surfactant: Either add a nonionic surfactant containing 50-74% surface-action agent at 0.25% v/v (2 pts./100 gals.), or add nonionic surfactant containing 75% or more surface-active agent at 0.125% v/v (1 pt./100 gals.), of the finished spray volume for ground applications. Add a nonionic surfactant at 0.25% v/v (2 pts./100 gals.) of the finished spray volume for aerial applications.

Crop Oil Concentrate: For ground applications, add a nonphytotoxic crop oil concentrate that contains 15-20% approved emulsifier, with 1.0% v/v (1 gal./100 gals.) of the finished spray volume. Add 1 pt. of crop oil concentrate per acre for aerial applications. **For cotton harvest aid, do not use crop oil concentrate when using PARAQUAT CONCENTRATE.**

NOZZLE SELECTION

The use of flat-fan nozzles is the most effective application of PARAQUAT CONCENTRATE. The use of flood nozzles may result in a reduction of weed control due to inadequate coverage because they produce large uneven droplets.

Use only flat fan nozzles when spraying less than 20 gallons of spray carrier per acre using the following table.

Recommended Nozzle Type and Spray Pressures and Setup

	Nozzle Type	
	Flat Fan	Flood
Maximum Size	8	15
Spray Pressure (at nozzle)	30-50 psi	30-50 psi
Maximum Nozzle Spacing	30"	40"
Direction of Spray Pattern	Down	Down
Maximum Speed	10 mph	10 mph
Spray Overlap (at each edge)	30%	50%

Reduced control will result if nozzles, pressures, or setups differ from the above chart.

SPRAY CARRIER

PARAQUAT CONCENTRATE may be inactivated by muddy water, or suspension-type fertilizers containing clay. Therefore, always use clean water (free of mud or clay), clear liquid nitrogen, or complete clear liquid fertilizers as the carrier when spraying this product. Never use suspension-type fertilizers containing clay as the spray carrier. Always use the higher rate of PARAQUAT CONCENTRATE and surfactant if using a complete clear liquid fertilizer containing high phosphate levels as the spray carrier.

Note: It is important that when using liquid fertilizers such as 28% N as a spray carrier, that nonionic surfactant still be used with PARAQUAT CONCENTRATE. The use of liquid fertilizer carriers are not substitutes for surfactants.

RATES OF PARAQUAT CONCENTRATE

With each use, follow recommended rates listed in the following tables. When weeds are larger or are dense, use the higher label rates. For use as a harvest aid, use higher rate when crop vegetation is dense. Do not exceed 0.50 lbs. a.i./A in a minimum of 30 gallons of spray for broadcast applications with backpack sprayers.

SPRAY VOLUME

With each use, follow recommended rates listed in the following tables. Spray volumes should be increased as necessary to obtain complete coverage of the target weed or plant without runoff from the foliage, because **the volumes listed are minimum volumes only.**

TARGET WEEDS SHOULD NOT EXCEED SIX INCHES IN HEIGHT WHEN SPRAYING LESS THAN 20 GALLONS OF SPRAY CARRIER PER ACRE.

APPLICATION TIMING

Applications should be made to small emerged weeds. Larger weeds more than 6 inches in height may be more difficult to control than weeds 1-6 inches in height. If possible, when green foliage is removed either from grazing or mowing, allow the weeds to grow 2-4 inches in height. Also, during harvesting forage or grain crops before spraying, weeds present in the field are also cut. Therefore, raise cutter bars as high as possible from the ground to cut stubble and weeds at a greater height, allowing sufficient green foliage to remain for applications.

BURNDOWN OF GRASS COVER CROPS OR VOLUNTEER CEREALS

The best results occur for control of grass cover crops or volunteer cereals when PARAQUAT

CONCENTRATE is applied prior to tillering or after boot stage, especially with a wheat cover crop or volunteer wheat. Complete control may not be achieved with treatments made between tillering and boot stage. Complete control of perennial cover crops should not be expected.

ENVIRONMENTAL CONDITIONS

This product is active over a wide range of environmental conditions such as cool (below 55°F), cloudy or overcast weather. However these conditions will slow the activity of PARAQUAT CONCENTRATE.

SPOT SPRAYING

Refer to the following table if only small areas are to be sprayed with labeled applications.

Mixing Instructions for Small Quantities for Spot Spraying

If the Broadcast Rate Per Acre for PARAQUAT CONCENTRATE is:	Add The Following Amount of PARAQUAT CONCENTRATE to 1 Gallon of Water
1 1/2 pts.	1/3 fl. oz
2 pts.	3/8 fl. oz.
2 1/2 pts.	1/2 fl oz.
3 pts.	2/3 fl. Oz.

Add 1/3 - 1/2 fl. oz. of a nonionic surfactant for each gallon of spray at all times. Thoroughly wet the foliage, but not to the point of runoff when spot spraying in this manner.

TANK MIXING: ENHANCED BURNDOWN OF DIFFICULT-TO-CONTROL WEEDS AND FOR RESIDUAL WEED CONTROL

Photosynthetic Inhibitor Herbicides

To control difficult weeds, tank mix PARAQUAT CONCENTRATE with other herbicides. The addition of other photosynthetic inhibitors (PSI) herbicides will slow the activity of PARAQUAT CONCENTRATE. This allows PARAQUAT CONCENTRATE to thoroughly distribute throughout a treated leaf, thus achieving better control than if PARAQUAT CONCENTRATE was applied alone.

PARAQUAT CONCENTRATE may be applied in tank mixture with the following PSI herbicides:

AAtrex® Herbicide
Atrazine Herbicide
Bicep Lite II
MAGNUM® Herbicide
Bicep MAGNUM® Herbicide
Canopy® Herbicide
Lariat® Herbicide
Lexone® Herbicide
Linex® Herbicide
Lorox® Herbicide
Lorox Plus™ Herbicide
Princep® Herbicide

Sencor® Herbicide

Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions.

Improved Weed Control with PSI's

The addition of a PSI herbicide will help improve the control of difficult weeds listed below. Make a second application for best results.

Barnyardgrass
Broadleaf signalgrass
Cheatgrass
Cocklebur
Fall panicum
Giant ragweed
Knotweed
Kochia
Lambsquarters
Malva (cheeseweed)
Marestail
Morningglory
Pennsylvania smartweed
Perennial weeds (suppression only)
Prickly lettuce
Sedges
Tansymustard
Velvetleaf
Volunteer wheat

Improved Control of Perennial and Annual Broadleaf Weeds

Tank mixing with labeled 2,4-D ester (Low Volatile), 2,4-DB or Banvel® herbicide will help improve control when perennial broadleaf weeds such as Canada thistle, bindweed, dandelion, etc., or difficult to control annual broadleaf weeds such as giant ragweed or morningglory are present. Reduced grass control may be achieved when tank mixing the amine formulation of 2,4-D with PARAQUAT CONCENTRATE.

Order of Tank Mixing

It is advisable to tank mix PARAQUAT CONCENTRATE and other listed products as follows:

1. Fill spray tank 1/2 full with clean water or other approved carriers such as clear liquid fertilizer.
2. Begin tank agitation and continue throughout mixing and spraying.
3. Add dry formulations (WP, DF, etc.) to tank.
4. Add liquid formulations (SC, EC, L, etc.) to tank.
5. Add PARAQUAT CONCENTRATE to tank.
6. Add nonionic surfactant to tank.
7. Fill remainder of spray tank.

Always read other pesticide products labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions.

It is advisable to perform a jar test to check physical compatibility when using different formulation of the herbicides listed on this label.

GENERAL PRECAUTIONS AND RESTRICTIONS

EQUIPMENT

PARAQUAT CONCENTRATE is **corrosive to aluminum**. Thoroughly flush all aluminum spray equipment and aluminum aircraft structures that are exposed to spray solution or spray drift with water immediately after use.

The activity of PARAQUAT CONCENTRATE may be reduced in dry areas where dust stirred up by high winds or equipment tires can coat weed or plant leaves. Therefore, avoid applications in extremely dusty conditions.

LIMITATIONS AND PRECAUTIONS

- **Unless otherwise indicated, PARAQUAT CONCENTRATE will severely injure or kill crop plants emerged at time of application if they come in contact with sprays.**
- Do not pasture livestock in treated fields or feed treated foliage in cotton when this product is used as a cotton harvest aid.
- Do not use around home gardens, schools, recreational parks, or playgrounds.
- Do not apply to soils lacking clay minerals such as peat, muck, pure sand, artificial planting media for preplant and preemergence (to the crop) uses.
- To enable maximum weed and grass emergence prior to treatment, seedbeds and plantbeds should be formed as far ahead of planting and treatment as possible.
- Avoid disturbing soil when seeding or transplanting.
- Transplanted plants may become damaged when they come in contact with plastic mulch used for preplant weed control and that has been treated with this product. To prevent damage to the crop, sufficient wash-off such as rainfall or sprinkler irrigation prior to planting may be needed.
- PARAQUAT CONCENTRATE will be ineffective in controlling or suppressing weeds and grasses that have emerged after application.

APPLICATION INSTRUCTIONS

Crop	Weeds	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
ALFALFA (California only) New seedlings		Broadcast	0.7-1.3 pts. See Table 2.	Ground: 10 gals. Air: 5 gals.	70	<ul style="list-style-type: none"> • Do not make more than one application per year. • Applications should be made during late winter or early spring. • Do not cut or harvest within 70 days after application. • Alfalfa foliage present at time of application will be burned. • Replanting may be needed due to the reduction of seedling stands. • Do not apply to seedling alfalfa grown for seed.
ALFALFA Preplant or Preemergence (No-till or conventional planting)		Broadcast or Banded Over Row	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Apply prior to emergence of the crop. Avoid disturbing soil when seeding. • Crop plants emerged at time of application will be killed.
ALFALFA Dormant season Established plantings Region A - See table at end of Alfalfa section	Weeds, including bluegrass, chickweed, henbit, downy brome, ryegrass, cheatgrass, dogfennel, tansymustard, London rocket, sowthistle, rescue brome, wild oats, and other winter annuals; and suppression of perennial weeds.	Broadcast	1.3-2.0 pts.	Ground: 10 gals. Air: 5 gals.	42	<ul style="list-style-type: none"> • Do not make more than one application per year. • Fall regrowth: Do not apply if last fall cutting is greater than 6". • Spring regrowth: Do not apply if last cutting is greater than 2". • After the crop is dormant, apply to well-established stands that are at least 1-year old. • Yield of first cutting may be reduced because alfalfa foliage present at the time of application will be burned. • Do not cut or harvest within 42 days after application. • For improved and longer-lasting weed control, tank mix with metribuzin (Lexone or Sencor). Always refer to the metribuzin label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.

Crop	Weeds	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
ALFALFA Dormant season Tank Mix with Velpar L Herbicide Region A - See table at end of Alfalfa section	Weeds including chickweed, downy brome and tansymustard.	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 10 gals.	42	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • When weeds are less than 4 inches tall apply at 0.7 pt. rate PARAQUAT CONCENTRATE • Mix PARAQUAT CONCENTRATE with 1-2 qts. of Velpar L per acre. • Use lower rate of Velpar L on loamy sands or sandy loams. Always refer to the Velpar L label for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • During the dormant season, make one application to established alfalfa stands. • Fall regrowth: Do not apply if last fall cutting is greater than 6." • Spring regrowth: Do not apply if last cutting is greater than 2". • Do not apply to alfalfa during the first season after seeding. • Temporary chlorosis may occur on alfalfa regrowth. • Increased chances of crop injury may occur if stress which may be caused in part by low fertility, disease, insects, winterkill, over cutting, drought or frost. • DO NOT USE on gravelly or rocky soils, exposed subsoils, hardpan, sand or poorly drained alkaline soils as crop injury, including mortality, may result. • Do not cut or harvest within 42 days of application.
ALFALFA Dormant Season On established plantings: Region B: See table at end of Alfalfa section. On fall-seeded newly established stands less than 1-year-old: Region A - See table at end of	Weeds including London rocket, sowthistle, rescue brome, wild oats, chickweed, ryegrass, bluegrass, cheatgrass, dogfennel, tansymustard, henbit, downy brome, and other winter annuals; and suppression of perennial weeds	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	60	<ul style="list-style-type: none"> • Do not make more than one application per year. • Applications should be made before first spring cutting and during late fall or winter months after the last fall cutting. • California: Do not apply if spring regrowth after grazing or cutting is more than 2 inches in Orange and Riverside counties, and all counties north of these counties. • All other areas within Region B: Do not apply if regrowth after grazing or cutting is more than 2 inches. • Do not harvest within 60 days of application. • Applications to alfalfa that is not dormant, or has broken dormancy, may result in stand and/or yield reductions. Replanting

Alfalfa section	On fall-seeded newly established stands less than 1-year-old: Region B - See table at end of Alfalfa section	California: Desiccation of weeds including bluegrass, ryegrass, shepherdspurse, chickweed, tansymustard, foxtail, sowthistle and groundsel.	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	60	<p>may be necessary. Green alfalfa foliage present at time of application will be burned.</p> <ul style="list-style-type: none"> • If there is a severe weed infestation, total hay yield of first cutting may be reduced in alfalfa fields and the reduction is typically directly proportionate to the loss of weed weight. • For improved and residual weed control in dormant established (at least 1-year-old) alfalfa, tank mix with metribuzin (Lexone or Sencor). Do not apply tank mix with metribuzin on alfalfa that is less than 1-year-old. • Always refer to metribuzin label for weeds controlled, rates of applications, directions for use, limitations, and restrictions. <p>California</p> <ul style="list-style-type: none"> • If ryegrass, shepherdspurse, sowthistle or groundsel are present, use high rate.
			Broadcast	0.5-0.8 pts.	Ground: 10 gals. Air: 5 gals.	60	

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
ALFALFA (East of the Rocky Mountains) Between-cuttings treatment in established plantings. (Includes first year alfalfa)	Broadcast	0.7 pt.	Ground: 10 gals.	30	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Control of weeds beyond the seedling stage and weed stubble cut off during harvest are less affected by this treatment. • Make applications immediately after alfalfa has been removed for hay or silage. • Do not treat more than 5 days after cutting. • A reduction in first year alfalfa stands and yields may occur if alfalfa is allowed to regrow more than 2 inches. • Burning of alfalfa foliage will occur at time of application. • Weed control may be reduced where moisture is limited such as in arid climates. • Do not cut or harvest within 30 days of application. • Apply as needed up to three times during the growing season in addition to a dormant application. • Do not make more than 2 applications during the first growing season of first-year alfalfa.
ALFALFA (For use only in the following states: ID, MT, NV, OR, UT, WA, WY)	Broadcast	1.7-2.7 pts.	Ground: 20-25 gals. Air: 5-10 gals.	See Precautions	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Do not harvest until at least 4 days after application. • Do not apply when weather conditions favor drift from treated areas. • Do not apply by ground equipment within 25 ft., or by air within 75 ft. of lakes; reservoirs; rivers; permanent streams; marshes or natural ponds; estuaries; and commercial fish farm ponds. • Use only on fields in production of alfalfa seed. Do not use on fields producing alfalfa for livestock feed. Do not use any portion of the

Desiccation of alfalfa to aid harvesting alfalfa

seed					treated field for human or animal feed, including seed, seed screenings, hay forage, or stubble
PARAQUAT CONCENTRATE/Reglone Tank Mix	Broadcast	1.3-2.7 pts. PARAQUAT CONCENTRATE/2 pts. Reglone	Ground: 20-25 gals. Air: 5-10 gals.	See Precautions	<ul style="list-style-type: none"> • Do not cut current year's treated alfalfa seed crop for hay or forage. Do not graze current year's treated alfalfa seed crops. • Do not use treated alfalfa seed for sprouting. Tag all alfalfa seed treated with PARAQUAT CONCENTRATE/Reglone tank mix at processing plants with, "NOT FOR HUMAN CONSUMPTION". The grower is responsible for notifying the processing plants of any seed crop treated with PARAQUAT CONCENTRATE/Reglone tank mix. • Remove ALL PARAQUAT CONCENTRATE/Reglone treated alfalfa seed screenings from the market because all screening from alfalfa seed processing are prohibited from feed channels.

ALFALFA: New Seedlings - Suppression and control of broadleaf weeds and grasses in new alfalfa seedlings grown for hay (California only).		
For Control of:	Rate/Acre*	
	For Suppression	For Control
Annual Bluegrass	---	10.7-21.3 fl. oz.
Chickweed	---	10.7-21.3 fl. oz.
Fiddleneck (6 inches tall or less)	5.4-10.7 fl. oz.	21.3 fl. oz.
Red Maids (6 inches tall or less)	---	10.7-21.3 fl. oz.
Shepherdspurse	10.7-21.3 fl. oz.	---
Spikeweed (4 inches tall or less)	5.4 fl. oz.	10.7-16.0 fl. oz.
Volunteer Small Grain (8 inches tall or less)	5.4-10.7 fl. oz.	21.3 fl. oz.

*** Use the 5.4 fl. oz. rate only when alfalfa has at least 3 trifoliate leaves; use the 10.7 fl. oz. rate only when alfalfa has 6 trifoliate leaves; or use rates over 10.7 fl. oz. only when there are 9 trifoliate leaves.**

Alfalfa – Regions

REGION A
Alaska, California (counties of Del Norte, Siskiyou, Modoc, Shasta, Lassen, Plumas, Sierra and Nevada), Colorado, Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey,

New York, North Dakota, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming

REGION B

Alabama, Arizona, Arkansas, California (all other counties not listed in Region A), Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Texas

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
ALMONDS	Directed Spray	0.8-2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • Avoid allowing spray to contact green stems (except suckers) or foliage. • When spraying around young trees, use a shield or wrap plant. • Do not graze treated areas and do not feed cover crops grown in treated areas to livestock. • Do not apply when nuts to be harvested are on the ground. • Retreatment or spot treatments may be necessary for mature woody weeds, perennial weeds, late germinating weeds and green suckers.
ARTICHOKE (GLOBE)	Directed Spray	1.7-2.7 pts.	Ground: 20-100 gals.	1	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Do not exceed 8 pts. per season. • Applications must be made at least 7 days apart. • Do not harvest within 24 hours of last application.
ASPARAGUS	Preplant or Preemergence Broadcast or Banded Over- Row	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Application should be made prior to emergence of the crop. • Emerged asparagus at time of application will be killed.
ASPARAGUS Preemergence to	Broadcast or Banded Over-Row	1.7-2.7 pts.	Ground: 10 gals.	6	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Application should be made prior to emergence of the crop or after last harvest.

established plantings at least 2 years old.					• Emerged asparagus at time of application will be killed.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
BEANS, DRY Not for use in California Sweet lupin White sweet lupin White lupin Grain lupin Adzuki beans Asparagus beans Black beans Broad beans Field beans Garbanzo beans Kidney beans Lablab beans Moth beans Mung beans Navy beans Pinto beans Rice beans Tepary beans Urd beans Guar PEAS, DRY Not for use in California Blackeyed peas Chickpeas Cowpeas Crowder peas Southern peas Catjang	Harvest-Aid	0.8-1.3 pts.	Ground: 20 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Add nonionic spreader at 1 qt./100 gals. of spray mix. • Use a single application of the higher rate for vining type beans or bush type with lush growth. • May also be applied as a split application and may improve vine coverage. However do not make more than 2 applications per year or exceed a total of 1.3 pints per acre. • Apply when at least 80% of the pods are yellowing and mostly ripe and when leaves are no more than 40% of bush type peas or beans or 30% of vine type peas or beans are green. • Do not apply when weather conditions favor spray drift. To reduce drift, a drift control agent may be included. • Not registered for use in dry beans and dry peas in California.
BERRIES Blackberry Blueberry Boysenberry Currant Elderberry Gooseberry	Postemergence Directed Spray	1.3-2.7 pts.	Ground: 50 gals.	—	<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • New canes or shoots can be injured. Therefore, apply before their emergence. • To prevent crop injury from spray mist, apply as a coarse spray.

Huckleberry Loganberry Raspberry					
CACAO	Directed Spray	1.3-2.7 pts.	Ground: 50-200 gals.	1	<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • Apply when weeds are succulent and growth is from 1-6". • Retreatment or spot treatments may be necessary for mature woody weeds, late-germinating weeds and grasses and for perennials. • Use a shield for young trees to prevent sprays from contacting cacao plants, as injury may result. • Do not spray under windy conditions. • Do not graze treated areas or feed treated cover crops to livestock.
CASSAVAS, TANIERS & YAMS (Puerto Rico only)	Shielded Post Directed Spray	1.3 pts.	Ground: 50 gals.	90	<ul style="list-style-type: none"> • Cassavas and Taniers: Do not make more than 3 applications per year. • Yams: Do not make more than 2 applications per year. • Make applications when weeds are succulent and growth is 1-6". • Prevent spray from contacting crop to prevent injury to crop. • Do not spray under windy conditions. • Do not graze treated areas or feed treated forage to livestock.

General Information for Chemical Fallow

- As the density of stubble, crop residue or weeds increases, use higher spray volumes for better coverage.
- To control volunteer wheat or downy brome, fall-applied treatments generally work best with PARAQUAT CONCENTRATE. If possible, tank mix with atrazine for maximum burndown and residual control.
- Apply from immediately after harvest up to emergence of the newly seeded crop as a broadcast or band treatment.
- Before applying PARAQUAT CONCENTRATE, cut wheat as high as possible to avoid cutting weeds too short, and allow the weeds to grow at least 2-3" after harvest.
- The addition of dicamba (Banvel) or 2,4-D ester (Low Volatile) may aid in the suppression of emerged perennial broadleaf weeds and large annual broadleaf weeds. Always refer to the product label(s) for 2,4-D ester (Low Volatile), Banvel, or residual herbicide for rates of applications, directions for use, limitations, and restrictions.
- It is permissible to tank mix with registered residual herbicide combinations other than listed for extended weed control during the fallow period
- Weeds and grasses emerging after application and weeds taller than 6 inches will not be controlled.
- Crop plants emerged at the time of application will be killed.
- The minimum total spray per acre allowed is 5 gallons for ground and 5 gallons for air applications.
- Apply 5-60 gallons spray mix per acre by ground application.
When applying at less than 10 GPA by ground:
Do not apply with floaters or exceed a speed of 10 mph.
Apply with flat fan nozzles at 30-40 psi.
Apply only in a tank mix with atrazine at a minimum of 0.5 lb. a.i./acre.
By air: apply in 5-10 gallons of spray mix per acre.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CHEMICAL FALLOW Continuous Wheat (2-3 month recropping interval)	Broadcast	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7- 2.0 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply at least 45 days before seeding. • For volunteer wheat or downy brome control in spring, use at least 1.3 pts. of PARAQUAT CONCENTRATE per acre with a Photosynthetic Inhibitor Herbicide. • Refer to the section "General Information for Chemical Fallow".
CHEMICAL FALLOW Wheat-Fallow- Wheat Rotations (Fall applied after harvest; seeded 12-14 months later)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Spray before weeds produce seeds. • Control of volunteer wheat and downy brome control increases when applications are made late August or early September. • For improved burndown and residual control of weeds, tank mix with Atrazine, Marksman® Herbicide, or Command® Herbicide. • For improved burndown and residual control of grass and broadleaf weed tank mix with metribuzin (Sencor 75DF). • Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions. • Refer to the section "General Information for Chemical Fallow".
CHEMICAL FALLOW Wheat-Fallow- Wheat Rotations (Spring applied: seeded 3-5 months later)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • To conserve moisture, application should be made March 1 to April 15, prior to spring rains. • Even though moisture loss is greater when applications are made after the boot stage, volunteer wheat is easier to control after this stage. • For volunteer wheat or downy brome control in spring, use at least 1.3 pts. of PARAQUAT CONCENTRATE per acre with a Photosynthetic Inhibitor Herbicide. • Refer to the section "General Information for Chemical Fallow". • For burn down and residual control of grass and broadleaf weeds, tank mix with metribuzin, (Sencor 75DF/Lexone). • Always refer to the label for metribuzin (Sencor 75DF/Lexone) for rates of applications, directions for use, limitations, and restrictions.
CHEMICAL FALLOW Wheat-Annual Crop-Wheat Rotations (Fall applied in wheat stubble)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For improved burndown and residual weed control, tank mix with Atrazine or Marksman. Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions. • Make applications after wheat harvest and before weeds produce seed. • If grasses such as foxtails or banyardgrass recover, respray before seed production. • Applications made late August to November help control volunteer wheat and downy brome. • Refer to the section "General Information for Chemical Fallow".
CHEMICAL FALLOW Wheat-Annual Crop-Wheat Rotations (Spring applied prior to planting an annual crop)	Broadcast	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For enhanced burndown and residual weed control, tank mix with Atrazine. Always refer to the respective product label(s) for Atrazine for rates of applications, directions for use, limitations, and restrictions. • For volunteer wheat or downy brome control in spring, use at least 1.3 pts. of PARAQUAT CONCENTRATE per acre with a Photosynthetic Inhibitor Herbicide. • Refer to the section "General Information for Chemical Fallow". • Refer to the Atrazine label for recommendations pertaining to soil pH and recropping intervals.

Approved Annual Crops are grain sorghum, corn, wheat, or proso millet.

Crop	Weeds	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CLOVER AND OTHER LEGUMES Including velvetbean, lespedeza, lupine, sainfoin, trefoil, vetch, crown vetch, and milk vetch. Dormant Season On established plantings: Region A - See table at end of Alfalfa section. On established plantings: Region B - See table at end of Alfalfa section. On fall-seeded, newly established stands less than 1-year-old: Region A - See table at end of Alfalfa section.	For desiccation of weeds, including London rocket, sowthistle, rescue brome, wild oats, chickweed, ryegrass, bluegrass, cheatgrass, dogfennel, tansymustard, henbit, downy brome, and other winter annuals, and suppression of perennial weeds.	Broadcast	1.3-2.1 pts.	Ground: 10 gals. Air: 5 gals.	60	<ul style="list-style-type: none"> • Do not make more than 1 application per year. • Applications should be made during late fall or winter months after the last cutting and before first spring cutting. • Do not apply if regrowth after grazing or cutting is more than 2". • Do not harvest within 60 days of application. • CAUTION: Stand and/or yield reductions may occur when applications are made to clover or other legumes that are not dormant, or have broken dormancy. Therefore, it may be necessary to replant. Burning will occur to green clover or other legumes' foliage present at the time of application. • Discoloration and temporary stunting will occur in clover or other legumes foliage present at the time of application. • If there is severe weed infestation, the total hay yield of first cutting may be reduced in clover or other legumes fields and is usually directly proportionate to the loss of weed weight. In California: <ul style="list-style-type: none"> • If ryegrass, shepherdspurse, sowthistle or groundsel are present, use high rate.
	California • Use for desiccation of weeds including bluegrass, ryegrass, shepherdspurse, chickweed, tansy mustard, foxtail, sowthistle and groundsel.	Broadcast	0.7-1.3pts.	Ground: 10 gals. Air: 5 gals.	60	
		Broadcast	0.7-1.3pts.	Ground: 10 gals. Air: 5 gals.	60	

On fall-seeded, newly established stands less than 1-year-old: Region B - See table at end of Alfalfa section.	Broadcast	0.5-0.8 pts.	Ground: 10 gals. Air: 5 gals.	60
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CORN FIELD CORN POPCORN SWEET CORN SEED CORN (Used alone)	Preplant or Preemergence Broadcast or Banded Over Row	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> Do not make more than 3 applications per year. Includes field, fresh sweet, forage, fodder and popcorn. To permit maximum weed and grass emergence, seedbeds should be formed as far ahead of planting and treatment as possible. Seeding should be done with a minimum amount of soil disturbance. Control will not occur when applications are made after weeds and grasses have emerged. However, crop plants emerged at time of application will be killed.
CORN Tank mixes for no-till/reduced till	Preplant or Preemergence Broadcast or Banded Over Row	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.*	—	<ul style="list-style-type: none"> Do not make more than 3 applications per year. Applications should be made as broadcast sprays before, during or after planting, but before crop emergence. PARAQUAT CONCENTRATE may be tank mixed with the following herbicides for improved burndown or residual control: 2,4-D Ester (Low Volatile) Harness® Harness® Xtra AAtrex®/Atrazine Lasso® Herbicide Banvel® Linex® Bicep MAGNUM® Lorox® Bicep Lite II MAGNUM® Princep® Dual MAGNUM Prowl® Herbicide Frontier® Simazine® Guardzman® Surpass® EC Harmony® Extra Herbicide Surpass® 100 (Preplant only) Topnotch® PARAQUAT CONCENTRATE may also be tank mixed with Ambush® insecticide. Always refer to respective product label(s) for rates of applications, directions for use, limitations, and

					restrictions.
					<ul style="list-style-type: none"> * Always refer to respective product label(s) to confirm if these products can be applied by air.
FIELD CORN, POPCORN, SWEET CORN, SEED CORN	Postemergence Directed Spray (including Hooded or Shielded)	0.7-1.3 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Applications should be made when weeds are actively growing. • Use a higher rate on larger or hard to control weeds. Weeds 6" or taller may not be controlled. • Severe damage and/or complete kill can occur if spray contacts corn plants <p>For Hooded Or Shielded Sprayers:</p> <ul style="list-style-type: none"> • Use a hooded or shielded sprayer with skids or wheels on the spray boom to maintain spray height in order to prevent excessive crop phytotoxicity. • Apply by directing spray between the rows and using hooded or shielded sprayers to prevent spray contact with crop plants. <p>For Directed Spray Without Hooded Or Shielded Sprayers:</p> <p>Corn height is measure from soil surface to top of whorl.</p> <ul style="list-style-type: none"> • Apply when corn is at least 10" tall with nozzles arranged to spray no higher than the lower 3" of corn stalks. • Corn plants shorter than 10" may be injured and not recover. • For corn more than 20" tall: Arrange the nozzles to spray no higher than the lower 1/3 of the corn stalks. • Injury to corn foliage will occur if sprayed. However, corn will recover and develop normally.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
FIELD CORN, POPCORN, SEED CORN	Harvest Aid Broadcast	0.8-1.3 pts.	Ground: 20 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than one application per year. Make ONE (1) application at least 7 days prior to harvest. • Apply after the corn is mature. This is indicated by a black layer which forms at the base of the kernels. You may consult your local agricultural authority for help in identifying the black layer. • Add nonionic surfactant containing at least 75% surface active ingredient at 0.25% v/v. • To desiccate mature broadleaf weeds and grasses or broadleaf weeds and grasses that are taller than 18", use 1.3 pts. • Drought stressed plants, especially broadleaf weeds, can be difficult to kill, and desiccation may not be complete.

FIELD CORN ONLY (grain, fodder, forage)	Postemergence Directed Spray USDA Witchweed Eradication Program	1.3 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • If regrowth occurs, initiate sprays in late June to early July and repeat in early August. • Follow application instructions in post-emergence directed spray section above.
FIELD CORN ONLY (grain, fodder, forage) 2,4-D Amine AE Tank Mix	Postemergence Directed Spray USDA Witchweed Eradication Program	5.4 fl. oz. +0.5 lb. 2,4-D Amine AE	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply as directed spray onto grassy weeds and witchweed before witchweed blooms. If regrowth occurs, reapply. • Follow application instructions in post-emergence directed spray section above. • Always refer to respective product label(s) for rates of applications, directions for use, limitations, and restrictions.
COTTON (Used alone)	Preplant or Preemergence	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply prior to, during or after planting, but before crop emergence. • For fallow bed treatment, beds should be preformed to permit maximum weed and grass emergence prior to treatment. • Seeding should be done with a minimum of soil disturbance.
COTTON (California only; Used alone)	Preplant	5.4-10.7 fl. oz.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For control of volunteer barley in preformed seedbeds.
COTTON Goal® Herbicide Tank Mix	Preplant or Fallow Bed Broadcast	1.7-2.7 pts.	Ground: or Air: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Always refer to the Goal label for weeds controlled, rates of applications, and directions for use, limitations, and restrictions.
COTTON Other Tank Mixes	Preplant or Preemergence	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply as a broadcast spray before, during or after planting, but before crop emergence. • For improved residual control or burndown, PARAQUAT CONCENTRATE may be tank mixed with the following herbicides: <ul style="list-style-type: none"> o Caparol® Herbicide o Cotoran® Herbicide o Cotton-Pro® Herbicide o Diurone® o Dual MAGNUM® o Harmony Extra (Preplant Only) o Meturon® Herbicide o MSMA o Prowl® o Zorial® Herbicide

				<ul style="list-style-type: none"> • When tank mixing with Cotoran DF[®] or Meturon DF[®], follow mixing instructions carefully, maintain constant agitation, and see Order of Tank Mixing section in respective labels. • When tank mixing with any of the herbicides listed above, always refer to respective product label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
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COTTON Harvest Aid Use Restrictions

- Do not make more than 4 applications per year.
- Do not pasture livestock in treated fields or feed treated foliage.
- Do not apply to cotton within 3 days before harvest.
- Repeat application if necessary. Do not exceed a total of 1.3 pts./A as a harvest aid.

May be tank mixed with other cotton harvest aid materials known to be effective by a local expert. Unless otherwise instructed in this label, always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions.

• PARAQUAT CONCENTRATE can be applied in a tank mix with methyl parathion and/or Karate[®] insecticide. Always refer to the respective product label(s) for rates of applications, directions for use, limitations, and restrictions.

Nodes above cracked bolls (NACB) timing is for guidance and is not intended to restrict the local expert in their use of the product.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
SOUTHERN COTTON Harvest aid for boll opening and defoliation (Tank mix with phosphate and chlorate defoliant).	Broadcast	5.4 fl. oz. + 1 pt. phosphate or 1 gal. chlorate	Ground: 10 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • Development of immature bolls will be inhibited. • Apply when 80% or more of the bolls are open and the remaining bolls to be harvested are mature. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.
SOUTHERN COTTON Additional tank mixes for boll opening and defoliation	Broadcast	2.1-3.3 fl. oz.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • PARAQUAT CONCENTRATE may be tank mixed with the following products to aid in defoliation and opening of mature bolls. Accelerate[®] Defoliant Def[®] Defoliant Dropp[®] Defoliant Ethephon Plant Growth Regulator Folex[®] Defoliant Harvade[®] Harvest Growth Regulator Prep[™] PGR • Apply when 60% or more of the bolls are open and the remaining bolls to be harvested are mature.

					<ul style="list-style-type: none"> • Development of immature bolls will be inhibited. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.
SOUTHERN COTTON Post Defoliation - To aid in opening of mature bolls and to desiccate green weeds.	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	3	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • If weed infestation is heavy or dense, use higher rate. • Apply when 75% or more of bolls are open and remaining bolls to be harvested are mature. • Development of immature bolls will be inhibited. • After a defoliation or conditioning application has been made, delay desiccation application of PARAQUAT CONCENTRATE approximately 3-7 days to minimize leaf sticking.
WESTERN COTTON Harvest aid for boll opening and early defoliation	Broadcast	3.7-5.4 fl. oz. + phosphate or sodium chlorate; and/ or other compatible harvest aid products.	Ground: 10 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • On rank cotton, use higher rate. • Do not use more than 5.4 fl. oz of PARAQUAT CONCENTRATE for early defoliation as excessive desiccation may occur. • Early defoliation timing is when 60% or more of the bolls are open and the remaining bolls to be harvested are mature (approximately 4 NACB). • Development of immature bolls will be inhibited. • Do not use more than 4.0 lbs. of actual sodium chlorate defoliant per acre at this early defoliation timing. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
WESTERN COTTON Harvest aid for boll opening and mid-to-late defoliation	Broadcast	5.4-10.7 fl. oz. alone or tank mix with sodium chlorate or phosphate defoliation and/ or other compatible harvest aid products.		3 (Alone)	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • Use the 10.7 fl. oz. rate of PARAQUAT CONCENTRATE in desert cotton areas or on rank vigorous cotton. • Mid-to-late defoliation timing is when 75% or more of the bolls are open and remaining bolls to be harvested are mature (approximately 3 or fewer NACB). • Development of immature bolls will be inhibited. • Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.
COTTON Stripper or Spindle Harvested	Broadcast	2.1-7.5 fl. oz.	Ground: 10 gals. Air:	3	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • BECAUSE OF EXTREMES IN ENVIRONMENTAL AND PLANT CONDITIONS, IT IS ADVISABLE TO APPLY THE RANGE OF RATES ON A SMALL BLOCK OF COTTON TO DETERMINE THE

Harvest aid for defoliation and boll opening.			5 gals.		<p>RATE THAT BEST FITS YOUR NEEDS. • Apply when 75% of the bolls are open and the remaining bolls to be harvested are mature.</p> <p>• DEVELOPMENT OF IMMATURE BOLLS WILL BE INHIBITED, SLICE BOLLS AND INSPECT THE SEED FOR MATURITY.</p> <p>• PARAQUAT CONCENTRATE may be applied alone or tank mixed with the following cotton harvest aids:</p> <p>Accelerate Defoliant®</p> <p>Def Defoliant®</p> <p>Dropp Defoliant® Ethephone Plant Growth Regulator Folex Defoliant®</p> <p>Harvadeo Harvest Growth Regulator Prep™ PGR</p> <p>• May be applied as a split application. Do not exceed a total of 1.3 pts./A.</p> <p>• To avoid leaf sticking, apply PARAQUAT CONCENTRATE as a desiccant approximately 3-7 days after defoliant or a conditioning application and 7-14 days before harvest.</p> <p>• Cooler temperatures may cause a longer waiting period between application of PARAQUAT CONCENTRATE as a desiccant and defoliation/ conditioner.</p> <p>• South of Interstate-10 in Texas, where temperatures are typically higher during defoliation, lower rates in the range may be necessary.</p> <p>• Always refer to tank mix product label(s) for rates of applications, directions for use, limitations, and restrictions.</p>
COTTON Late season desiccation	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	3	<p>• Do not make more than 4 applications per year.</p> <p>• BECAUSE OF EXTREMES IN ENVIRONMENTAL AND PLANT CONDITIONS, IT IS ADVISABLE TO APPLY THE RANGE OF RATES ON A SMALL BLOCK TO DETERMINE THE RATE THAT BEST FITS YOUR NEEDS.</p> <p>• May be applied as a split application. Do not exceed a total of 1.3 pts./A.</p> <p>• Apply when 85% of the bolls are open and the remaining bolls to be harvested are mature (approximately 0 NACB).</p> <p>• Development of immature bolls will be inhibited. Slice bolls and inspect the seed for maturity.</p> <p>• South of Interstate-10 in Texas, where temperatures are typically higher during defoliation, lower rates in the range may be necessary.</p> <p>• Delay desiccation application of PARAQUAT CONCENTRATE approximately 3-7 days to minimize leaf sticking if a defoliation or conditioning application has been made.</p> <p>• May be tank mixed with other harvest aid materials known to the local expert to be effective.</p>
COTTON Desiccation of regrowth	Broadcast	0.75-1.25 pts.	Ground: 10 gals. Air: 5 gals.	3	<p>• Do not make more than 4 applications per year.</p> <p>• Use to desiccate regrowth occurring after defoliation or desiccation.</p> <p>• Because regrowth is difficult to control, thorough coverage with the full recommended rate is necessary. • Control is dependent on growing conditions and desiccation of small new regrowth may not always be complete.</p> <p>• If regrowth is excessive, use higher rate.</p>

EASTER LILIES (Field grown)	Preemergence	1.7-2.7 pts.	Ground: 10 gals.	—	• Do not exceed two applications per year.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
FALLOW LAND Prior to planting of any crops.	Preplant Broadcast to Fallow Land	1.0-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year, during the fallow period. • Fallow land may be between operations such as disking, ripping, plowing, leveling, irrigating or listing for ground preparation purposes. • Use for the control of weeds such as bluegrass, chickweed, henbit, downy brome, ryegrass, cheatgrass, dog fennel, tansy mustard, London rocket, sowthistle, rescue brome, wild oats, volunteer cereals and other winter annuals and for suppression of perennial weeds or sedges. • For weeds approaching the maximum size of 6", the higher rate may be used. • No more than 2 applications should be made during the fallow period. • Prior to application allow maximum weed emergence to maximize the benefit of this use. • Adhere to the preharvest intervals and other crop specific restrictions for planted crops elsewhere on this label.
GRASSES (For seed) (For use in seedbed preparation)	Preplant, at Planting, or Preemergence	1.3-2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Prepare the seedbeds and allow weeds to germinate. • Apply PARAQUAT CONCENTRATE when weeds are at the 3-5 leaf stage. • Applications may be repeated as necessary (but only up to 3 applications per year) prior to grass emergence. • Do not graze treated areas or use the seed or straw from treated areas for animal feed or bedding.
GUAR (Preharvest desiccation)	Preharvest	1.3 pts.	Ground: 10 gals.	4	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply after the pods are fully mature. • Do not graze treated areas or use the treated forage for animal feed.
GUAVA	Directed Spray	2.5 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 4 applications per year. • Do not allow spray to contact green stems, fruit or foliage. • Do not graze treated areas. • Do not feed cover crops grown in treated areas to livestock. • Retreatment or spot spraying may be necessary for mature woody weeds, late-germinating weeds and grasses, and perennials.
HOPS (ID, OR, & WA only)	Directed Spray and/or Suckering and	1.3 pts.	Ground: 10 gals.	14	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Retreatment of spot treatment may be necessary.

	Stripping.				<ul style="list-style-type: none"> • Do not allow spray to contact green stems, foliage, flowers, or cones as injury may result. • Do not allow animals to graze in treated hopyards. • Silage and hop vine refuse may be fed to livestock. • Spray only the basal 2 ft. of the vines for sucking and stripping. Repeat as necessary, but only up to 3 applications per season. • Experience with varieties other than Cascade, Yakima Cluster, and Bullion is limited. If using PARAQUAT CONCENTRATE on other varieties than these, test the use pattern on a small number of vines of each variety to determine sensitivity to injury. Do not use on untested varieties if unacceptable crop injury occurs. • Chemical Pruning: Spray when vines are less than 3 ft. tall to burn back existing vines and obtain even emergence of subsequent vines. • APPLICATION TO HOP VINES LESS THAN 6 FT. TALL MAY CAUSE UNACCEPTABLE INJURY.
LENTILS NOT REGISTERED FOR USE ON LENTILS IN CALIFORNIA.	Harvest Aid	0.8-1.3 pts.	Ground: 20 gals. Air: 7 gals.	7	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Add nonionic surfactant at 0.25% v/v (2 pts./100 gals.) of the finished spray volume. • May also be applied as a split application. DO NOT make more than 2 applications or exceed a total of 1.3 pts./A. The split application may improve coverage. • Apply when crop is mature and at least 80% of the pods are yellowing and mostly ripe with no more than 30% of the leaves still green in color. • DO NOT apply when weather conditions favor spray drift. To reduce spray drift a drift control agent may be included.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
MINT (Peppermint, Spearmint)	Dormant Season	1.3-2.0 pts.	Ground: 10 gals. Air 5 gals.	-	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • For suppression of weeds such as groundsel, chickweed, downy brome, bluegrass, Italian ryegrass, prickly lettuce. • Apply when crop is dormant before spring growth begins and when weeds are less than 6" tall. • Do not apply more than 2.0 pts./A per dormant season. • May be tank mixed with Sinbar® Herbicide (terbacil) weed killer for improved contact activity and residual control of Italian ryegrass, prickly lettuce and groundsel. Apply this tank mixture no more than once per season. Always refer to Sinbar (terbacil) label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
ONIONS (seeded) AND GARLIC	Preplant/ Preemergence	1.7-2.7 pts.	Ground: 10 gals.	60 200 (CA only)	<ul style="list-style-type: none"> • Do not make more than 1 application per year. • For heavy weed infestations or wild oat control use the higher rate. Apply only one application per season at the 2.7 pts./A dosage.

					<ul style="list-style-type: none"> • Allow maximum weed and grass emergence prior to treatment but apply prior to crop emergence. • Apply a maximum of 2.7 pts./A per season.
PASSION FRUIT	Directed Spray	2.5 pts.	Ground: 10 gals.		<ul style="list-style-type: none"> • Do not make more than 5 applications per year. • If bark is still green at application time, use a shield or wrap vine. • Pick all fruit off the ground prior to application if application is to be made during harvest season. • Do not allow animals to graze on treated areas. • It may be necessary to retreat or spot treat.
PEANUTS	Broadcast At Ground Crack Postemergence	5.4-10.8 fl. oz.	Ground: 10 gals.		<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • To control or suppress small (1-6") emerged annual grass and broadleaf weeds in peanuts at ground crack. A second application may be made up to 28 days after ground crack. • For at ground crack use, PARAQUAT CONCENTRATE can be tank mixed with Pursuit® Herbicide or Dual MAGNUM for residual weed control. • Always refer to the Pursuit or Dual Magnum label for a list of weeds controlled, application rates, necessary precautions, and use limitations. • Make no more than 2 applications per season and do not apply a total of more than 10.8 fl. oz. of product per acre per season. • Crop foliage sprayed will be injured in the form of bronzing and crinkling, but the crop will recover and develop normally. • Do not apply by air.
PEANUTS Basagran® Herbicide Tank Mix	Broadcast At Ground Crack Postemergence	5.4-10.8 fl. oz.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Tank mix PARAQUAT CONCENTRATE with Basagran at 1 pt./A. for improved control of weeds such as cocklebur, bristly starbur, smartweed and prickly sida. • This tank mix can be applied at the ground crack stage of peanuts. A second application may be made up to 28 days after ground crack. • Make no more than 2 applications per season and do not apply a total of more than 10.8 fl. oz. of product per acre per season. • Crop foliage sprayed will be injured in the form of bronzing and crinkling, but the crop will recover and develop normally. • Always refer to the Basagran label for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • If peanuts show injury (leaf phytotoxicity and/or plant stunting) produced by any other herbicide treatment, do not apply this tank mix as injury may be enhanced and/or prolonged.

					<ul style="list-style-type: none"> • During prolonged periods of drought or unseasonably cold weather do not apply this tank mix as unsatisfactory weed control may result. • Do not apply by air.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
PEANUTS Butyrac® Herbicide or Butoxone® 200 Herbicide Tank Mix	Broadcast Postemergence	5.4-10.8 fl. oz.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • For improved control of weeds such as cocklebur, sicklepod and morningglory, tank mix PARAQUAT CONCENTRATE with 8-16 oz. (0.125-0.25 lbs.) per acre of Butyrac or Butoxone 200. • Do not apply a total of more than 10.8 fl. oz. of product per season and make no more than 2 applications per season • Crop foliage sprayed will be injured in the form of bronzing and crinkling but the crop will recover and develop normally. • Always refer to the Butyrac or Butoxone 200 labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not apply by air.
PIGEON PEAS (Puerto Rico only)	Directed Spray	1.3 pts.	Ground: 10 gals.	60	<ul style="list-style-type: none"> • Do not make more than 1 application per year. • Avoid contact with pigeon pea foliage. • Do not make more than 1 application per season. • Do not graze treated areas or feed treated forage to livestock. • Cannery waste can be fed to livestock.
PINEAPPLE	Directed Spray	1.3-2.7 pts.	Ground: 10 gals.	20	<ul style="list-style-type: none"> • Do not exceed 3 applications per season. • More mature weeds may require retreatment.
POTATO	Preplant or Preemergence Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply up to ground cracking stage, before potatoes have emerged.
POTATO (California, Washington, Oregon, Idaho only; used alone)	Preplant Broadcast	0.4-0.7 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For control of volunteer barley in preformed seedbeds.
POTATO Fresh Market Only	Broadcast	0.7-1.3 pts.	Ground: 20 gals.	3	For Fresh Market Potatoes Only. (Fresh Market Potatoes include potatoes that are sent directly from the field to a consumer, grocery store,

<p>Preharvest vine killing and weed desiccation.</p> <p>For Use Only in the states of: Colorado, Delaware, Idaho, Illinois, Indiana, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, Nevada, New Jersey, New York, North Dakota, Ohio, Oregon, Pennsylvania, South Dakota, Utah, Washington, Wisconsin and Wyoming</p>				<p>or processor for use.)</p> <ul style="list-style-type: none"> • DO NOT make more than 2 applications per year. • DO NOT use on potatoes that will be stored as tuber decomposition may result. • Potatoes must be harvested promptly after desiccation and processed or consumed immediately. • DO NOT apply to drought stressed potato vines. • DO NOT use to desiccate the vines of seed potatoes as seed pieces may fail to germinate and grow normally. • DO NOT pasture livestock in treated potato fields. • DO NOT exceed 2.6 pts./A per season. • Begin application when leaves begin to turn yellow. • Immature potato foliage is tolerant to PARAQUAT CONCENTRATE. However, desiccation will not be complete under this condition. • Use 1.3 pts./A rate where quick vine kill is desired. • For dense vine growth, use 2 applications of 0.6 pt/ A. Split applications must be applied a minimum of five days apart.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
RICE	Preplant or Preemergence Broadcast	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2.0 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply as a broadcast spray before, during or after planting, but before crop emergence. When vegetation is dense, use higher rates and spray volumes. • Seeding should be done with a minimum amount of soil disturbance. • This product will not control weeds and grasses emerging after application. Crop plants emerged at time of application will be killed. • PARAQUAT CONCENTRATE may be tank mixed with other herbicides registered for this use for improved or extended weed control. Always refer to the tank mix product label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not flood/flush within 48 hours of application in order to ensure complete kill of vegetation. If cool, cloudy and/or wet weather delays speed of kill, do not flood/flush until complete kill is evident.
SAFFLOWER	Preplant or Preemergence Broadcast or Banded Over Row	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply before, during and after planting but before crop emergence.
SAFFLOWER (California only)	Preplant Broadcast	0.7 pt.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For control of volunteer barley in preformed seedbeds.

			Air: 5 gals.		
SMALL GRAINS (Barley, wheat)	Preplant or Preemergence	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.	Ground: 5 gals. Air: 5 gals.	—	• Do not make more than 3 applications per year.
SMALL GRAINS (Wheat Only) Hoelon® 3EC Tank Mix	Preplant or Preemergence	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	• Do not make more than 3 applications per year. • A tank mix with Hoelon 3EC will improve grass control. • Apply when weeds are actively growing and 1- 6" in height. Weeds 6 inches or taller may not be controlled. • Do not apply this tank mix to barley as crop injury may result. • Always refer to the Hoelon 3EC label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
SORGHUM (Grain)	Preplant/ Preemergence Broadcast or Band	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	48 (grain) 20 (forage)	• Do not make more than 3 applications per year. • To allow maximum weed and grass emergence, seedbeds should be formed as far ahead of planting as possible • Seeding should be done with a minimum amount of soil disturbance.
SORGHUM (Grain) Atrazine & 2,4-D ester (Low Volatile) Tank Mix	Preplant or Preemergence	Weeds 1-3": 1.3- 1.7 pts. Weeds 3-6": 1.7- 2 pts. Weeds 6": 2-2.7 pts.		48 (grain) 20 (forage)	• Do not make more than 3 applications per year. • PARAQUAT CONCENTRATE may be tank mixed with Atrazine for improved preemergence or residual weed control. The addition of 2,4-D ester (Low Volatile) may assist in the suppression of perennial and annual broadleaf weeds emerged at the time of application. Always refer to the specific product label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
SORGHUM (Grain) Harmony® Extra Herbicide Tank Mix	Preplant	1.3-2.5 pts.	Ground: 10 gals.	48 (grain) 20 (forage)	• Do not make more than 3 applications per year. • For Improved weed control, PARAQUAT CONCENTRATE may be tank mixed with Harmony Extra. • Always refer to the Harmony Extra label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.

Crop	PARAQUAT CONCENTRATE		Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
	Use Pattern	Rate Per Acre			
SORGHUM (Grain)	Postemergence Directed (Including Hooded or Shielded)	0.7-1.3 pts.	Ground: 10 gals.	48 (grain) 20 (forage)	• Do not make more than 2 applications per year. • Apply when weeds are actively growing. • Use higher rate on larger or hard to control weeds. Weeds 6" or taller may not be controlled. • Severe damage and/or complete kill can occur if spray contacts sorghum plants. • Do not exceed 2 postemergence-directed applications or exceed a total of 5.3 pts. PARAQUAT CONCENTRATE per season. HOODED OR SHIELDED SPRAYERS • To avoid excessive crop phytotoxicity, use a hooded or shielded sprayer with skids or wheels on the spray boom to maintain spray height.

					<ul style="list-style-type: none">• Apply by directing spray between the rows and by using hooded or shielded sprayers to prevent spray contact with crop plants. <p>DIRECTED SPRAY WITHOUT HOODED OR SHIELDED SPRAYERS</p> <ul style="list-style-type: none">• Apply when sorghum is at least 12" tall when naturally standing.• Do not exceed 30 psl nozzle pressure or spray under conditions which may cause excessive drift.• Use precision directed-spray application equipment adjusted so that no more than the lower 3" of the sorghum stalk is contacted by the application spray.• Some crop injury will occur. The degree of injury is related to the precision of application and spraying conditions.																		
SOYBEANS	Preplant or Preemergence	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts. Weeds 6": 2-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none">• Do not make more than 3 applications per year.• Do not exceed a total of 4.0 pts. of PARAQUAT CONCENTRATE per season.• Apply as a broadcast spray before, during or after planting, but before crop emergence. • PARAQUAT CONCENTRATE may be tank mixed with the following herbicides for improved burndown or residual control: <table><tr><td>2,4-DB</td><td>Lorox</td></tr><tr><td>Canopy Dual</td><td>Lorox Plus Prowl</td></tr><tr><td>MAGNUM</td><td></td></tr><tr><td>Goal</td><td>Pursuit Herbicide</td></tr><tr><td>Harmony Extra</td><td>Scepter Herbicide</td></tr><tr><td>{Preplant Only}</td><td>Sencor Herbicide</td></tr><tr><td>Lasso</td><td>Surflan® Herbicide</td></tr><tr><td>Lexone</td><td>Turbo Herbicide</td></tr><tr><td>Linex</td><td></td></tr></table> <ul style="list-style-type: none">• The rate of this product to be used in these tank mixtures is dependent on weed height and growing conditions. Where weed canopy is dense or under dry conditions, use the highest recommended rate of PARAQUAT CONCENTRATE. Always refer to the respective product label(s) for a list of weeds controlled, rates of applications, directions for use, limitations, and restrictions.• The lower application rate may be used when weeds are less than 4" tall and a selective postemergence spray or cultivation will be made within 3 weeks after planting.• Seeding should be done with a minimum amount of soil disturbance.• Do not graze or harvest for forage or hay before the R3 stage of soybean development (early pod).	2,4-DB	Lorox	Canopy Dual	Lorox Plus Prowl	MAGNUM		Goal	Pursuit Herbicide	Harmony Extra	Scepter Herbicide	{Preplant Only}	Sencor Herbicide	Lasso	Surflan® Herbicide	Lexone	Turbo Herbicide	Linex	
2,4-DB	Lorox																						
Canopy Dual	Lorox Plus Prowl																						
MAGNUM																							
Goal	Pursuit Herbicide																						
Harmony Extra	Scepter Herbicide																						
{Preplant Only}	Sencor Herbicide																						
Lasso	Surflan® Herbicide																						
Lexone	Turbo Herbicide																						
Linex																							
SOYBEANS 2,4-D ester (Low Volatile) Tank Mix	Preplant or Preemergence	Weeds 1-3": 1.3-1.7 pts. Weeds 3-6": 1.7-2 pts.	Ground: 10 gals. Air: 5 gals.		<ul style="list-style-type: none">• Do not make more than 3 applications per year.• Apply 2,4-D ester (Low Volatile) at 0.35-0.475 lbs. a.i./A at least 7 days prior to planting. • Apply 2,4-D ester (Low Volatile) at 0.475-0.95 lbs. a.i./A at least 30 days prior to planting. • Do not apply 2,4-D ester (Low Volatile) prior to planting soybeans if you are not able to accept the results of soybean injury																		

		Weeds 6": 2-2.7 pts.			including possible loss of stand and yield. • Do not use amine formulation as PARAQUAT CONCENTRATE activity may be reduced. • May be tank mixed with residual herbicides listed above. • Always refer to the 2,4-D ester (Low Volatile) label for weeds controlled, rates of application, directions for use, limitations, and restrictions.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
SOYBEANS	Postemergence Directed Spray (Includes Hooded or Shielded)	3.0-5.3 fl. oz.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply when weeds are actively growing. • Use the lower rate of PARAQUAT CONCENTRATE for control of seedling johnsongrass, crabgrass, goosegrass, Brachiaria, Texas millet and pigweed less than 2" tall. • For control of 2-4" red rice, Brachiaria, barnyard grass, crabgrass, goosegrass, seedling johnsongrass, giant foxtail, and fall panicum, use 5.3 fl. oz. of PARAQUAT CONCENTRATE. • Use 5.3 fl. oz. of PARAQUAT CONCENTRATE for control of 2-3" sicklepod, purslane, pigweed, cutleaf ground cherry, and common ragweed. • Apply PARAQUAT CONCENTRATE at 5.3 fl. oz./A plus 0.2 lb. active ingredient per acre of a 2,4-D formulation for control of 2-4" grasses in mixture with common cocklebur, morningglory, and red rice. • Always refer to the 2,4-D label for weeds controlled, rates of applications, directions for use, limitations, and restrictions • Do not graze or harvest for forage or hay. • If necessary, make a second and final application 7-14 days later. <p>HOODED OR SHIELDED SPRAYERS</p> <ul style="list-style-type: none"> • Apply by directing spray between the rows and using hooded or shielded sprayers to prevent spray contact with crop plants. • Use higher rate on larger (less than 6") or hard to control weeds. Weeds 6" or taller may not be controlled. • Severe damage and/or complete kill can occur if spray intentionally or accidentally (Including drift of fine droplets) contacts the plants. <p>DIRECTED SPRAY WITHOUT HOODED OR SHIELDED SPRAYERS</p> <ul style="list-style-type: none"> • Do not treat on soybeans that are less than 8" tall. • Use precision directed spray application equipment adjusted so that no more than the lower 3" of the soybean plant is contacted by the application spray. • Do not exceed 30 psi nozzle pressure or spray under conditions which may cause excessive drift. • Some crop injury will occur. The degree of injury is dependent upon the precision of

					application and spraying conditions.
SOYBEANS	Harvest Aid	5.4-10.7 fl. oz.	Ground: 20 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Indeterminant varieties: Applications should be made when at least 65% of the seed pods have reached a mature brown color or when seed moisture is 30% or less. Determinant varieties: Apply when plants are mature, i.e., beans are fully developed, 1/2 of leaves have dropped, and remaining leaves are yellowing. • Injury will occur on immature soybeans. • Mature cocklebur, especially drought-stressed plants, are tolerant to PARAQUAT CONCENTRATE and desiccation will not be complete. Always use the higher rate when treating cocklebur. • Do not apply within 15 days of harvest. • Do not graze or harvest for forage or hay.
STRAWBERRIES	Postemergence Directed Spray	1.3 pts.	Ground: 20 gals.	21	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Direct spray between the rows, using shields to prevent spray contact with crop plants. • Do not allow spray to contact strawberry plants as injury or excessive residues may result. • Do not apply more than 3 times per season. • Do not graze livestock in treated areas.
SUGAR BEETS	Preplant or Preemergence	1.3-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For heavier weed infestations, use the higher label rate. • Seeding or transplanting should be done with a minimum amount of soil disturbance. • Crop plants emerged at time of application will be killed. • Can be used in fallow bed/stale seedbed for weed control. • Seedbeds or plantbeds should be formed as far ahead of treatment as possible to permit maximum weed emergence.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
SUGARCANE	Postemergence Directed Spray (includes Hooded or Shielded)			—	General Comments <ul style="list-style-type: none"> • Do not make more than 2 applications per year, except applications made by air in Florida and Texas in which the maximum number of applications allowed is 1 per year. • Apply as a hooded, shielded or directed spray to avoid contact with cane foliage to prevent leaf burn and yield reduction. • If necessary, a second and final application can be made when new weed growth is 2-6" high. • Do not graze treated areas or feed treated forage to livestock.
—Florida—		1.3 pts.	Ground: 50 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Optimum results can be obtained by applying in early spring (March-April) when weeds are small.

					<ul style="list-style-type: none"> • Do not apply after June 1 as cane growth may be stunted and yields reduced.
—Hawaii—		1.3 pts.	Ground: 20 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Do not apply after cane rows have closed in.
—Louisiana—		0.7-2.0 pts.	Ground: 20 gals.	30	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • For tiller control, apply when tillers are less than 18" high. • For heavier weed infestations or tiller growth use the higher rate.
—Florida & Texas—	Harvest Aid	0.4-0.7 pts.	Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 1 application per year. • Under cool, cloudy weather conditions use higher rate. • Apply 3-14 days before burning and harvest.
SUNFLOWER	Preplant or Preemergence Broadcast or Banded Over Row	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • Apply before, during, or after planting but before crop emergence.
SUNFLOWER	Preharvest Desiccation Broadcast	0.8-1.3 pts.	Ground: 10 gals. Air: 5 gals.	7	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Apply when sunflower seeds reach physiological maturity (when seed moisture is 35% or lower). For many varieties, this is equivalent to the time when the back of the heads are yellow and the bracts are turning brown. • Do not graze treated areas or feed treated forage to livestock. • When crop stands or weed infestations are heavy, use the higher label rate.
TARO, DRYLAND (Hawaii Only)	Postemergence Directed Spray	1.3-2.1 pts.	Ground: 10 gals.	180	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Do not allow spray to contact the taro plants as injury may result. • Make the first application when weed growth is 1-4" high. • Weeds emerging after the application will not be controlled. • A single re-treatment may be made; however, do not harvest dryland taro within 6 months of the last application.
TREE PLANTATION ESTABLISHMENT Deciduous and Conifers	Preplant Broadcast	1.3-2.7 pts.	Ground: 20 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • To allow maximum emergence of weeds prepare ground early. • Apply prior to planting. Plant with minimal soil disturbance. • For heavier weed infestations, use the higher application rate. • For improved burndown or residual control, tank mix PARAQUAT CONCENTRATE with other herbicides labeled for this use. • Always refer to the specific tank mix herbicide label(s) for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not apply in less than 20 gals./A as weed control will be reduced.

Crop	Use Pattern	PARAQUAT CONCENTRATE	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
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		Rate Per Acre			
TREES AND VINES	Directed Spray	1.7- 2.7 pts.	Ground: 10 gals.		
Orchards, Vineyards, Windbreak, Shade & Ornamental Trees: Acerola Apples Apricots Avocados Bananas Beechnut Brazil nut Butternut Calamondin Cashew Cherries Chestnut Chinquapin Citrus citron Coffee Figs Filberts Grapefruit Grapes Hickory nut Kiwi fruit Kumquat Lemon Lime Macadamia nuts Mandarin Nectarines Olives Orange (sour & sweet) Papayas Peaches Pears Pistachios Plums Prunes Pummelo Satsuma mandarin Walnuts Other shade and ornamental trees such as arborvitae, ash, elm, fir, oak, pine, etc.				Apricots 28 Cherries 28 Figs 13 Kiwi Fruit 14 Nectarines 28 Olives 13 Peaches 14 Pistachios 7 Plums 28	<ul style="list-style-type: none"> • Do not make more than 5 applications per year, except for: Apricots, Cherries, Kiwi Fruit, Nectarines, Peaches, Plums, no more than 3 applications per year; Olives, no more than 4 applications and Pistachios, no more than 5 applications but only 2 applications after shells split. • Do not allow spray to make contact with green stems (except suckers), fruit or foliage. • Use the shield or wrap plant when spraying around young trees or vines. • Do not graze treated areas. • Do not feed covered crops grown in treated areas to livestock. • Do not apply when figs, nuts or olives to be harvested are on the ground. • For apricots - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season. • For cherries - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season. • For figs - Do not harvest within 13 days after application and do not exceed 5 postemergence directed applications per season. • For grapes - Treat when sucker growth is no more than 8" long. Late season applications to weeds should be made to avoid contact with desirable foliage. • For kiwi fruit - Do not treat more than 3 times per year. • For mature woody weeds, perennial weeds, late germinating weeds and green suckers, retreatment or spot treatment may be necessary. • For nectarines - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season. • For olives - Do not harvest within 13 days after application and do not exceed 4 postemergence directed applications per season. • For peaches - Do not harvest within 14 days after application, and do not exceed 3 postemergence directed applications per season. • For pistachios - Do not exceed 2 applications after shells split. • For plums - Do not harvest within 28 days after application and do not exceed 3 postemergence directed applications per season.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
TREES AND VINES Tank Mixes	Directed Spray	1.7-2.7 pts.	Ground: 10 gals.	Always refer to other Tank Mix labels	<ul style="list-style-type: none"> Do not make more than 5 applications per year, except for: Apricots, Cherries, Kiwi Fruit, Nectarines, Peaches, Plums, no more than 3 applications per year; Olives, no more than 4 applications and Pistachios, no more than 5 applications but only 2 applications after shells split. This product may be tank mixed with registered residual herbicides listed below for combined emerged and residual weed control. PARAQUAT CONCENTRATE may be tank mixed with the following herbicides: Devrinol® Herbicide Goal® Karmex® Krovar® Herbicides Princep® Sinbar® Solicam® Herbicide Surflan® Always refer to other herbicide labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
TYFON (New Hampshire only)	Preplant Preemergence	1.7-2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> Do not make more than 3 applications per year. Seeding should be done with a minimum of soil disturbance. Weeds and grasses emerging after treatment will not be controlled. Crop plants emerged at time of application will be injured.
VEGETABLES (Seeded or Transplanted) Beans (Lima, Snap) Broccoli Cabbage Cantaloupe Carrots Cauliflower Chayote fruit Chinese cabbage Chinese waxgourd Citron melon Collards	Preplant Preemergence	1.3-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> Do not make more than 3 applications per year. Seedbeds or plantbeds should be formed as far ahead of treatment as possible to permit maximum weed emergence. Banded or broadcast treatment applications can be made before, during or after planting but prior to the crop emergence. For heavier weed infestations, use the higher rate. Seeding or transplanting should be done with a minimum amount of soil disturbance. Crop plants emerged at time of application will be killed. PARAQUAT CONCENTRATE can be used in fallow bed/stale seedbed

Cucumber Eggplant Gherkin Gourd, Edible Groundcherry Lettuce Momordica spp. Musk melons Peas Pepino Peppers Pumpkin Squash Sweet Corn Tomatillo Turnips Tomatoes Watermelons					for weed control alone or tank mixed with Goal. Always refer to the Goal label for weeds controlled, rates of applications, directions for use, limitations, and restrictions. • Do not harvest tomatoes within 30 days after application.
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Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
VEGETABLES Eggplant Tomatoes Peppers	Directed Spray	1.3 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • For control or suppression of emerged weeds between rows after crop establishment. • Use precision directed spray application equipment adjusted to prevent spray contact with crop plants. Do not exceed 30 psi nozzle pressure. Do not spray under conditions which may cause excessive drift. • Apply when weeds are succulent and weed growth is less than 6". • Do not apply more than 3 applications per season. • Do not allow animals to graze in treated areas. • Do not harvest tomatoes within 30 days after application.
VEGETABLES Tomatoes	After Final Harvest	1.6-2.5 pts.	Ground: 40-120 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Apply in 40-120 gallons of water per acre (0.62-0.93 lb. a.i./A). • Add NIS containing 75% or more surface active agent at 0.125 v/v (1 pt./100 gals. spray solution). • To ensure maximum herbicide burndown, tomato vines should be thoroughly covered. • PARAQUAT CONCENTRATE may be deactivated and less efficacious when dirty or muddy water is used. • To aid in the removal of sweet potato

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					whitefly, burn tomato vines with propane burners as soon as possible after the vines have dried down sufficiently. • DO NOT apply more than a total of 3 lbs. active ingredient (paraquat) per acre per season. • To minimize drift, do not use nozzles or nozzle configurations which produce fine spray droplets (mist). • Do not make more than 2 applications per year. • For control of volunteer barley in preformed seedbeds. • Do not harvest tomatoes within 30 days after application.
VEGETABLES (California, Washington, Oregon, Idaho only) Lettuce Melon Sugar Beets Tomatoes	Broadcast	0.4-0.7 pts.	Ground: 10 gals. Air: 5 gals.	—	
VEGETABLES Rhubarb	Dormant	1.7-2.7 pts.	Ground: 10 gals.	—	• Do not exceed 2 applications per year. • Apply during dormant season before buds in crown begin to grow.

RESIN SOAKING

Pines including Loblolly, Shortleaf, Longleaf, Slash, Virginia, Pond, Pitch, and Spruce Pines.

Tree Selection -Trees should be selected from stands on sites not subject to stress from periods of extreme drought stress because the desiccating effect of PARAQUAT CONCENTRATE is accentuated during drought, causing a reduction in the amount of oleoresin deposited in the xylem. Vigorous, non-stagnated natural or planted stands should be selected. Plan PARAQUAT CONCENTRATE treatments in stagnated or commercial timber stands, not sooner than three years after a commercial thinning.

Application Directions To bring the treatment into contact with sapwood (or xylem), apply water-diluted PARAQUAT CONCENTRATE to an appropriate wound in the tree trunk.

Bark Streaks or Cuts: Use a standard or rotary bark hack or a chainsaw shipping tool (used in naval stores work) to remove a single 1-inch wide streak of bark about 1-2 ft. from ground level. Do not exceed 1/3 of the circumference of the tree. Serious girdling of the trunk and premature death of the tree can result if multiple streaks or cuts are made. Apply a coarse spray (about 1.7-5.0 ml) PARAQUAT CONCENTRATE solution (1-5% cation, wt./wt. basis) to runoff to the exposed xylem, using a low-pressure sprayer. The amount of spray required per cut depends on tree circumference and the length of cut or streak. For example, for a 9-inch diameter tree, using 3 ml of 2 or 4% PARAQUAT CONCENTRATE solution will cover the 1-inch wide streak and will result in application of 60 or 120 mg per streak.

Time of Treatment: Less severe pine beetle infestation and longer tree life usually result during cool season treatments under non-drought seasons. However, resin soaking can occur from treatments made any time of the year.

Interval between Treatment and Tree Harvest: There should be at least a 6-month interval between application of PARAQUAT CONCENTRATE and tree harvest. However it is preferable the interval is from 12-24 months, even though intervals of over 6 months may not be possible under conditions of drought or serious pine beetle attacks possibly making early harvest necessary.

With this treatment, there is a potential for promoting beetle attack or causing premature death of the tree. At high dosage rates, desiccation of the xylem tissue, rather than the desired resin

soaking, may occur.

Note: This type of treatment may reduce stem growth during between treatment and tree harvest.

Dilution Table for PARAQUAT CONCENTRATE (3.0 lbs. cation per gallon)	
Concentration of Cation Desired (wt./wt. basis)	Add the Following No. Gal. of Water to $\frac{2}{3}$ Gallon of PARAQUAT CONCENTRATE
0.2%	118.8
0.5%	46.8
1.0%	22.9
2.0%	10.9
3.0%	6.9
4.0%	4.9
5.0%	3.7

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
CONSERVATION RESERVE, FEDERAL SET-ASIDE, CONSERVATION COMPLIANCE PROGRAMS (For use in compliance with the Federal Conservation Reserve Program or Federal set-aside programs)	Broadcast	1.7-2.7 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 3 applications per year. • PARAQUAT CONCENTRATE may be tank mixed with other herbicides registered for this use for improved emerged weed control or extended weed control. Always refer to tank mix herbicide labels for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
NONCROP USES	Broadcast or Spot Treatment	1.7- 2.7 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> • Repeat applications as necessary but do not make more than 10 applications per year. • To be used in noncrop areas including public airports, electric transformer stations, pipeline pumping stations, around commercial buildings, storage yards and other installations, and fence lines . • Avoid spray contact with the foliage of ornamentals or desired plants.

PASTURE RESEEDING For suppression of existing sod and undesirable emerged broadleaf weeds and grasses prior to or at time of planting grasses or forage legumes	Broadcast	0.7-1.3 pts.	Ground: 10 gals. Air: 5 gals.	See specific geographic recommendation	<ul style="list-style-type: none"> Do not make more than 3 applications per year. West of Cascade and Sierra Nevada Mountains <ul style="list-style-type: none"> Apply in October through December after first fall rains and after weeds have emerged and sod has started new growth. Apply on moderately to heavily grazed areas for best seeding results. Do not use in heavy sod and weed growth areas. East of Rocky Mountains <ul style="list-style-type: none"> Use the 1.3 pts rate on vigorous or coarse sod species such as brome grass. Apply prior to, or at time of seeding grasses or forage legumes. Apply only to grazed or mowed pastures not more than 3" in height at time of treatment. Bermudagrass or Bahiagrass Sods <ul style="list-style-type: none"> Apply in late summer or early fall to sod not exceeding 3" in height. For control of emerged little barley, apply in February or March before the mid-boot stage of little barley. Bermudagrass and Coastal Bermudagrass Pastures <ul style="list-style-type: none"> Apply when bermudagrass is dormant. For control of little barley, apply before the mid-boot stage. Do not mow for hay until 40 days after treatment.
For control of endophyte-fungus-infected fescue forage legume/grass mixture and other grass pastures	Broadcast (Split Application)	0.7-1.3 pts. followed by 0.7-1.3 pts.	Ground: 10 gals.	—	<ul style="list-style-type: none"> Do not make more than 2 applications per year. Use split applications of 10-21 days apart if necessary. Do not exceed 2.6 pts./A total in preparation for reseeding. For spring plantings, the initial application of 0.7-1.3 pts. may be made the previous fall. Apply when fescue is actively growing and no more than 4" high. To reduce the infestation of endophyte-infested grass, do not allow fescue to go to seed starting with the preceding year's crop.

Crop	Use Pattern	PARAQUAT CONCENTRATE Rate Per Acre	Minimum Total Spray Per Acre	Grazing or Preharvest Interval (Days)	Additional Precautions, Restrictions and Directions
*For prickly pear desiccation in pastures *Not for use in California	Spot Sprays	0.8 fl. oz. per gallon of water	Spray to wet weed foliage	—	<ul style="list-style-type: none"> Do not make more than 10 applications per year. Hand-held equipment such as knapsacks backpack sprayers, pump-up pressure sprayers, hand-guns, and hand-wands, can be used to direct the spray onto weed foliage so that the spray

					<p>thoroughly wets foliage.</p> <ul style="list-style-type: none"> • Mix 0.8 fl. oz. of PARAQUAT CONCENTRATE and 1/3 fl. oz. of a nonionic surfactant per gallon of water. • Completely and uniformly cover all green prickly pear foliage with spray. • Apply in May through September for best desiccation results. • Do not use more than 1.6 pts. of PARAQUAT CONCENTRATE per acre per year. • Apply only to pastures with no more than 3" of height at time of treatment. • Tank mix with Grazon® P+D Specialty herbicide at a rate of 1-2 fl. oz. per gallon of water for improved desiccation and perennial control of prickly pear. • Always refer to the Grazon P+D Specialty herbicide label for weeds controlled, rates of applications, directions for use, limitations, and restrictions.
*For Juniper Species leaf moisture reduction or desiccation prior to Prescribed burning of pastures *Not for use in California	Broadcast	1.3 pts.	Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 10 applications per year. • Use only in conjunction with prescribed burning as recommended and monitored by local SCS or University and Extension Range Specialists. • Apply during hot, dry weather conditions (generally July and August). • Use 2% v/v nonionic surfactant in a minimum of 5 gal spray solution. • Monitor juniper leaf moisture content. Maximum leaf moisture reduction generally occurs 3-4 weeks after PARAQUAT CONCENTRATE application. • Significant soil moisture and/or wet weather conditions prior to or after application will decrease the potential for juniper crown burns. • Reduction in leaf moisture can be adversely affected by cool or humid weather conditions.. • Do not graze livestock after application or prior to burning.
*Native Pastures *Not for use in California	Broadcast	1.0-1.25 pts.	Ground: 10 gals. Air: 5 gals.	—	<ul style="list-style-type: none"> • Do not make more than 2 applications per year. • Apply PARAQUAT CONCENTRATE for control of downy and Japanese brome. • Apply in spring after 90% node formation of brome species, but before full bloom. • Emerged native perennial grasses will be burned by application, but application after 90% node formation will allow adequate time for native grasses to recover and attain maximum growth in the use season. • Do not apply more than 1.25 pts. PARAQUAT CONCENTRATE per year. • Apply only to pastures with no more than 3" of height at time of treatment.

<p style="text-align: center;">Conversion Table PARAQUAT CONCENTRATE to Be Applied</p>			
Ounces	Pints	Lb. a.i.	Acres/Gallon
2.5	0.16	0.06	51.3
4.8	0.30	0.11	26.7
5.28	0.33	0.12	24.2
5.52	0.35	0.13	23.2
10.00	0.63	0.23	12.8
11.00	0.69	0.26	11.6
11.20	0.70	0.26	11.4
12.00	0.75	0.28	10.7
16.00	1.00	0.38	8.0
20.00	1.25	0.47	6.4
20.80	1.30	0.49	6.2
24.00	1.50	0.56	5.3
28.00	1.75	0.66	4.6
32.00	2.00	0.75	4.0
40.00	2.50	0.94	3.2
43.20	2.70	1.00	3.0

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage or disposal.

Pesticide Storage: Store in original container and place in a locked storage area. Do not mix or store in containers, spray tanks, nurse tanks, or such systems made of aluminum or having aluminum fittings. Store at temperatures above 32°F. For Emergencies involving a Spill, Leak, Fire, Exposure, or Accident, contact: CHEMTREC at (800) 424-9300.

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal:

Do not reuse container as container is not safe for food, feed or drinking water!

Plastic containers: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Minibulk containers: Return empty containers for reconditioning.

WARRANTY STATEMENT IMPORTANT NOTICE - Seller warrants that this product conforms to the chemical description and is reasonably fit for purposes stated on the label when used in accordance with the directions and instructions under normal conditions of use; **but neither this warranty nor any other warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to seller, and buyer assumes the risk of any such use.**

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Pages 230 through 232 are not included in this copy.

The material not included contains the following type of information:

- ☐ Identity of product inert ingredients.
- ☐ Identity of product impurities.
- ☐ Description of the product manufacturing process.
- ☐ Description of quality control procedures.
- ☐ Identity of the source of product ingredients.
- ☐ Sales or other commercial/financial information.
- ☐ A draft product label.
- ☒ The product confidential statement of formula.
- ☐ Information about a pending registration action.
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